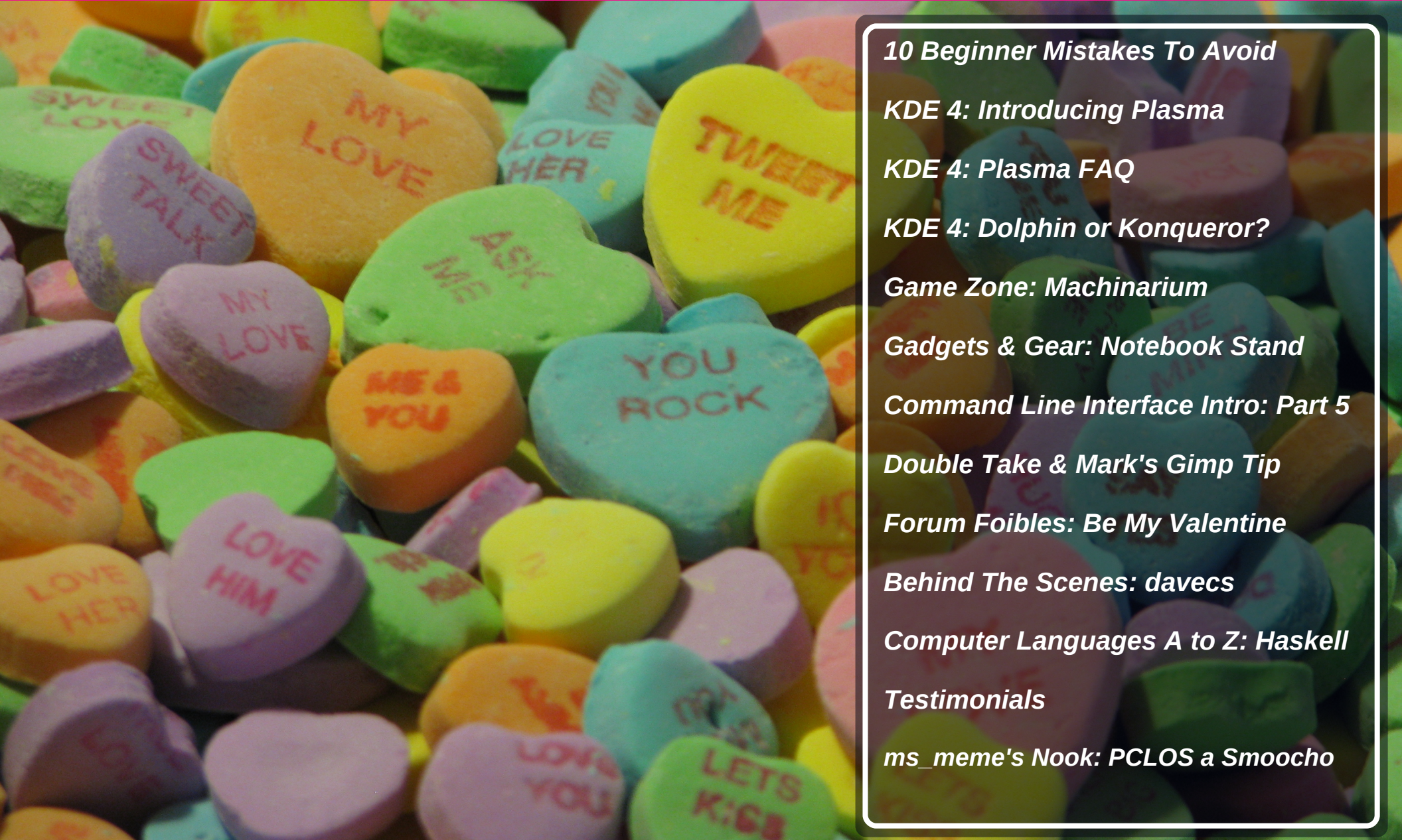


# The **NEW** PCLinuxOS Magazine

Volume 37

February, 2010



*10 Beginner Mistakes To Avoid*  
*KDE 4: Introducing Plasma*  
*KDE 4: Plasma FAQ*  
*KDE 4: Dolphin or Konqueror?*  
*Game Zone: Machinarium*  
*Gadgets & Gear: Notebook Stand*  
*Command Line Interface Intro: Part 5*  
*Double Take & Mark's Gimp Tip*  
*Forum Foibles: Be My Valentine*  
*Behind The Scenes: davecs*  
*Computer Languages A to Z: Haskell*  
*Testimonials*  
*ms\_meme's Nook: PCLOS a Smoocho*



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# Welcome From The Chief Editor

by Paul Arnote (parnote)

Welcome to the February 2010 issue of **The NEW PCLinuxOS Magazine**. February is looking to be a very busy month. First, KDE 4.4 is scheduled to come out in the early part of the month. Second, the new 2010 release of PCLinuxOS draws nearer (very near!) with each and every passing day. Texstar has been a packaging machine, as he works hard to provide a new, stable, and updated ISO that will be PCLinuxOS 2010, featuring the latest up-to-date version of KDE 4.4, Kernel 2.6.32.4 and an updated xorg server.

In preparation for the new PCLinuxOS release, this month's magazine features a series of articles aimed at getting PCLinuxOS users more familiarized with KDE 4. First, Meemaw compares Conqueror and Dolphin, in **KDE 4: Conqueror or Dolphin?** I take a look at Plasma in KDE 4, in my article **KDE 4: Introducing Plasma**. To further help with the transition to KDE 4, the magazine reprints the official **KDE 4: Plasma FAQ** from the KDE 4 userbase site. The magazine staff is planning on taking a closer look, in future issues, of other new developments and changes with the KDE 4 desktop.

Not everything deals with just KDE 4 in this issue, however. I have written an article to help users transitioning from another operating system to Linux, with **10 Beginner Mistakes To Avoid**. AndrzejL writes another **Gadgets & Gear** column this month, featuring a new **Canyon Notebook Stand** for his notebook computer. Gary L. Ratliff, Sr. offers up



another installment in his exploration of computer programming languages, **Computer Languages A to Z: Haskell**. Mark Szorady provides another **Double Take** cartoon, along with his monthly **"Mark's Gimp Tip."** I review another game for the Game Zone column, with **Game Zone: Machinarium**.

We get a close up view of yet another person responsible for helping keep (and make) PCLinuxOS what it is, with the **Behind The Scenes: davecs** article. Ms\_meme graces us with another installment of her monthly columns, **Forum Foibles** and **ms\_meme's Nook**, as well as a **special birthday wish for Texstar**. Peter Kelly continues his series of articles on learning the command line, with **Command Line Interface Intro: Part 5**. Dave Buckler gives us a good tutorial on creating high dynamic range photographic images, using programs from the PCLinuxOS repository, with his article **HDR Photography With Qtfpsgui & Gimp**. We also have 3 **testimonials** from new users in this month's magazine. Finally, this month's magazine cover was created by me, to

celebrate Valentine's Day, which is a February tradition in the United States.

All I can say is that you had better hang on to your seats, as February is looking to be a very exciting and busy month for PCLinuxOS users! Lots of changes are literally just around the corner. Stay tuned, and pay close attention to the announcements on the PCLinuxOS home page, as

well as developments that are posted in the forums and on the PCLinuxOS Twitter page.

Until next time, may each of you enjoy nothing but peace, love, happiness, and joy!

Paul Arnote [parnote]  
PCLinuxOS Magazine Chief Editor

The  
**PCLinuxOS**  
Magazine

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# Behind The Scenes: davecs

by Paul Arnote (parnote)

*In the continuing series of highlighting those responsible behind the scenes to keep PCLinuxOS running and making PCLinuxOS what it is, this month we have a chat with Dave Spagnol, a.k.a. davecs, one of the Global Moderators in the PCLinuxOS forum. – Paul Arnote, PCLinuxOS Magazine Chief Editor.*

**What is your name, chief occupation, age, geographical place of residence, and marital status?**

Name: David Spagnol, Age 55, Live in Barking, Essex (Greater London), UK. Separated.

**When did you first get into computing (what type of computer, what OS, etc.)?**

Like many of my generation, I cut my teeth on a Sinclair ZX81. I added a 48k memory expansion and an expanded graphics ROM, and a "real" keyboard. Couldn't leave anything alone even then. I progressed to the Sinclair Spectrum, with 48k, then with 128k, Microdrives etc. writing some stuff in Machine Code. Also the Tatung Einstein. My first PC-like experience was a Victor Vicki which was great fun. I got my first "proper" PC, a 486, when I was 40 I think. Running Windows 3.1.

Of course I couldn't leave it alone, using all sorts of "Alternate" shells my favourite being "Wayfarer" which added a proper modern style Taskbar, and all sorts of ways of displaying folder contents. Being forced up to Win95 (and 98) was a step back

compared to Wayfarer, which refused to run under Win9x.

**When did you make the move to Linux, what distro were you using, and what attracted you?**

It was USB that made me investigate Linux. I had Win98SE, and did not want to upgrade to WinXP, which I thought was designed to control the user, rather than the other way around. I thought (wrongly) that USB would not work under Win98SE. I thought I could put in a USB board and use Linux. I was also





cynical of Microsoft, because everyone I knew used MS, without questioning. Why spend hundreds for MS Office when you could get Lotus Office, in my opinion at the time, a far superior product, for a tenner? Even in the previous Win3.1 days, Ami Pro was superior to Word or Wordperfect! Being a bit of a rebel, I thought why not go the whole way?

In the middle of all this, I got broadband for the first time. The guy who installed it used a USB connection (even though there was also Ethernet on both the cable modem and the computer), thus disproving what I thought about Win98SE and USB, but hey, my mind had been made up.

I initially downloaded Mandrake, v8.0 or 8.1 I think. I was very disappointed. I could not get the display out of 800x600 mode, and the default graphics make it look like a kid's toy. Later I tried Debian, 3.0r1 I think, 7 disks downloaded and it was slower in those days. That scared the bejusus out of me. I managed to get up an OS with no graphics, and no idea what to do with it. That was almost me and Linux finished!

Some time later, I relented and tried Mandrake 9.0. This time I got it off a Magazine Cover, and this time, I was able to get up a 1280x1024 display, though a very shaky unpleasant one. It was then that I discovered the true meaning of collaboration, and learned how to hack the XF86 initialisation file to make the display rock solid. I was on my way.

Another problem was that the internet connection kept dropping, and I could only start it again by rebooting. I found a guy in Hong Kong who used Red Hat, but had the same problem with similar

hardware. He sent me a file he had written to run in a loop, detect when the connection was dropped, and restart it. It didn't work on Mandrake, but I looked at it. It was a bash script, not much different in essence to a Windows Batch File, I had a little go at it, and got it working in Mandrake. I had learned my first lesson about the Linux Community.

Another one followed soon. I had a digital camera whose "movie clips" needed a commercial program to convert them into something that Windows or Linux could actually use. And it didn't work in Linux. Rather cheekily, I emailed the guys working on Transcode. I ended up with a long personal correspondence with Tilmann Bitterberg himself, which ended with him sending me a patch which was later incorporated into Transcode. And it wasn't like he was doing me a favour; it was almost that I was helping him, just by giving him a new format to work on.

Whilst using Mandrake, I had discovered extra repositories through PLF (Penguin Liberation Front), including Texstar's. As a result I joined Texstar's web site PCLinuxOnLine. Shortly after I tried Gentoo. Although the installation is long and tedious, it's not actually all that difficult. And my computer was now flying.

It was a little after this that I thought I'd have a look at the latest Mandrake/iva again, 10.0 or 10.1 I think. Horror of horrors, no "Texstar" repository. I did a search which led me back to PCLinuxOnLine, and it was then that I found the reason, Tex had made his own distro. I sort of felt duty bound to try it, after all I had had a few exchanges with Tex on his forum, and used his Mandrake rpms in the past.

The most amazing thing was that PCLinuxOS was easier to install than Mandrake had been, but flew almost as quickly, and with fewer quirks than Gentoo. At first I just copied over some of the superior artwork from PCLinuxOS to Gentoo, but as time went on I kept thinking why spend all this time compiling? PCLinuxOS gives me what I want without the hassle. I'll always be grateful for Mandrake for giving me that first leg-up onto the Linux train, Tilmann and the guy from Hong Kong for showing me what community is all about, and Gentoo for making me look under the hood. But PCLinuxOS was the first time I thought to myself: Here is something I could give to others.

#### **When did you make the switch to PCLinuxOS?**

I think it was around the time of release 0.81. Whenever that was. As you can see, I remember release numbers more than years. History was my worst subject in school even though I think I understand the processes, for much the same reason.

#### **What attracted you to PCLinuxOS?**

As I said earlier, that it was something I could pass forward to others, not just take for myself.

#### **With the 2010 version of PCLinuxOS just around the corner, what do you think will be the biggest challenge facing PCLinuxOS users?**

For those who are stubbornly hanging on to KDE3, moving upwards (KDE4) or sideways. By making our default desktop Folder View (~/Desktop), we can

minimise the unfamiliarity. I've found it's possible to make Dolphin more like Konqueror File Manager, let's make the default as painless as possible, and then discuss on the forum how to make best use of what's new.

**What do you view to be your greatest challenge as a Global Moderator in the PCLinuxOS forum?**

Finding the time to do it at present, my life is a little complicated! I spend most weekends with my girlfriend as she lives too far away to be with in the working week, you can imagine this restricts my time.

**What do you view to be your greatest reward in your role as a Global Moderator?**

The knowledge that you are helping keep the forums accessible for the users that need them most.

**What do you view to be your greatest strengths and your greatest weaknesses?**

I think when I first became a moderator, my strength was that I was the first non-American. We try to avoid political controversy on the forum, but in truth, what is "normal" in one place is "controversial" in another. Unfortunately to give examples would be to stoke up controversy in itself, which is not what I am here to do. We're mainly an English speaking forum, but that includes many nationalities, colours, religions etc. We're here to help people get their Linux computers up and running, and maybe we can do our bit for world peace just by being civil to each other, helping each other, and not flagging up the

things that divide us. There are plenty of places to go to on the net for that, and I've got plenty to say - in the appropriate place!

My greatest weakness is that I can get lazy! Can't we all?

**If you had to describe yourself and your personality in terms of art, which piece of art would best describe you?**

I can be quite a philistine at times, I really haven't a clue.

**Do you run other OS's, and if so, which ones, and what attracts you to them?**

On my main computer I have a Windows2000 partition. I have used it once, to connect the serial port to my PVR to change the firmware. On my NC10, I shrunk the main partition to 39Gb and left WinXP there. I still don't know why I bothered. I haven't even bothered to correct the keyboard layout from American to British yet.

**How much time (per week) do you devote to your duties as a Global Moderator of the PCLinuxOS forum?**

I really don't keep count. Maybe not as many as I should, for reasons already stated.

**When you are not working, either at your primary occupation or as a Global Moderator, what do you like to do to occupy your time (hobbies, activities, etc.)?**

I like making friends on line and chatting. Watching Football (us British invented the game and we don't call it Soccer!!!). Socialising. Spending time with my girlfriend.

**What "parting words of wisdom" would you like to leave us with?**

If it takes a week to walk a fortnight, how many apples in a bunch of grapes?



**PCLinuxOS Enlightenment e17 ISO**

**Coming soon!**



# 10 Beginner Mistakes To Avoid

by Paul Arnote (parnote)

Ever increasingly, Linux is becoming more and more popular. Perhaps it's due to users looking for something different or better. Perhaps it's due to the tough economic times, where users cannot afford to lay out reams of cash for commercial software packages or operating systems. But whatever the reason, there are more and more users giving Linux a try.

Along the way, there are several common mistakes that users new to Linux tend to make. In fact, from time to time, you can even find some seasoned Linux users making some of these same mistakes. If you can avoid these mistakes, the transition to Linux will be a lot easier.

## 1. Installing from outside the official repositories.

One of the biggest mistakes new Linux users make is trying to install programs from outside the official repositories. Linux is not, for the most part, like the commercial operating systems, where you either download programs from the internet or purchase them from your favorite computer or software store, and install them on your computer.

Most every Linux distribution has a package manager. In openSUSE, that package manager is called YUM. In Mandriva, the package manager is called URPMI. In PCLinuxOS, the package manager is called Synaptic. The package manager



lists all of the programs that are available for your distribution of Linux. In most cases, those packages have been prepared in such a way that the addition of one program doesn't break three others (or the whole system) by removing or changing libraries that other programs rely on. Take note that you may not notice any breakage right away. But maybe one week, three months, or a year down the road, after you've installed yet another package that needs one of the libraries that have been removed or changed, you are going to run into problems. And, because you've installed programs from outside the official repositories, there is little chance for you to receive assistance, since those "in the know" will have no way to know what changes the "alien" packages have made to your system. In such a case, the best advice you are likely to receive will be to a) re-install your system, and b) stop installing packages from outside the official repositories.

## 2. Doing "selective" updates.

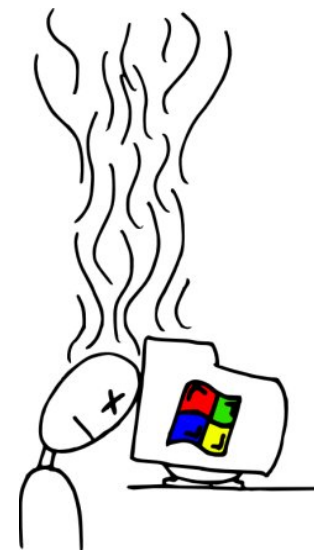
Without a doubt, this is a sure-fire way to break your system and make it unstable. PCLinuxOS is a rolling distribution. This means that updates are rolled out as they are ready, instead of on a regular schedule, as some other Linux distributions do. By doing selective updates, you will eventually reach a point where your system will break, since libraries that are needed by one program won't be present, because they are included in another package that you did not install.

Rather, it's considered good practice to periodically open up Synaptic, press "Reload," then "Mark All Updates," then "Apply." This will download and install ALL the updated packages, and you will be

left with the most up-to-date version of PCLinuxOS. How often you choose to do this is up to you. It can be done daily or weekly, but you should never pick and choose which updates to apply.

## 3. Linux is NOT Windows.

Face it: Linux is NOT Windows. Sure, there may be a lot of similarities, and you will be able to use many of the skills you developed while you were using Windows, or any other commercial operating system, for that matter. But don't expect Linux to be exactly like Windows. The similarities make it easier to make the transition to Linux. The differences are, more than likely, the reason you switched. Embrace the similarities, and take the time to learn the differences.



## 4. Avoid learning the command line.

The computer world has "graduated" from a text-based interface, to a more intuitive and usable graphical user interface, or GUI. In fact, it is the single most important advance in computing history, as it paved the way for the non-technical user to have access to computing, and it helped lead the way for computers to make the inroads into daily life

that it has. Way back "in the day," most computing was done from a command prompt, as in the early days of Linux and the olden days of DOS. Today, you can do most of what you need to do from the GUI, without even a thought about a text-based command prompt. However, that text-based interface has not gone away. It's still there, and more powerful than ever.

And, because so much of what you may need to do can be done from the GUI, many users shy away from the "more technically challenging" command prompt or command line interface. Many users find it to be "too hard" to use and learn. Once you learn it, though, you are likely to find that many things can be done faster from the command line. And, you are likely to find some things that can only be done from the command line, further exposing the full power of Linux.



So, once you've learned the GUI you've chosen to go with in Linux (isn't it nice having so many choices?), take the time to start learning the command line. An added benefit: should you ever find yourself in the position where your GUI will not boot, knowledge of the command line may just help you get things right again. You can get a great start at learning the command line interface, by either going here (<http://www.linuxcommand.org/>), or by following Peter Kelly's (critter's) Command Line Interface Intro monthly tutorial series, here in PCLinuxOS Magazine (the fifth installment is running in this month's magazine, and started in the October 2009 issue of the [PCLinuxOS Magazine](#)).

### 5. Misusing the help forums.

Even though Linux is free, help for getting started is close at hand, and available from multiple avenues. There are help files, user manuals, and even the "man pages" that are easily accessed through either the command line or Konqueror. One of the most popular avenues for getting help, though, are the community forums that exist for the various Linux distributions.

While it may be easier to just pop into the forum and ask your question – which most likely has been asked a thousand times before – many users will have their question answered faster by first doing a forum search. Don't expect to be spoon fed. By searching, you are likely to learn other important things along the way, which will help you become more proficient, faster, and find the answers to other lurking questions.

### 6. Avoid running as root (when needed).



One thing that most new users discover upon their switch to Linux, are repeated statements that you DO NOT RUN AS ROOT. However, that doesn't mean that you should avoid doing root tasks. Just be careful. With root privileges, you can inflict some serious damage on your system. In fact, it's a good idea to get into the habit of triple checking any command you enter on the command line before hitting the "Enter" key. And, there are some

tasks that can only be performed with root privileges, like running system updates or changing your internet connection settings.

### 7. Having too high of expectations.

It is a well known fact that Linux runs exceptionally well on older hardware – and even better on cutting edge hardware. In fact, Linux has a reputation of being able to breathe new life into older hardware, extending the useful life of that hardware. But keep your expectations realistic. Linux isn't going to make your computer equipment run 1000% faster. A old Pentium III is still just that: an old Pentium III. It never has been, nor will it ever be, as fast as a Pentium IV, or any of the newer multi-core processors.



### 8. Relying too much on WINE.

WINE is a nice, handy program that will allow you to run many of your favorite Windows programs on Linux, but not all of them. It is understandable that users will want to continue to use the programs that they have become accustomed to from when they were running Windows, or who may wish to continue to use the programs that they paid good, hard earned money for. But you shouldn't neglect checking out the Linux equivalent to many of the programs commonly used under Windows. Linux has many programs that replace those you may have become accustomed to under Windows, and many of those programs run better, faster, and have



more features than their Windows counterparts. Plus, the price is right: free, just like Linux.

Many times, there are multiple Linux programs for their Windows counterparts. Linux is about choice, so feel free to check them all out, and see which one best suits your needs and the way you work. Once you've made your choice, remove the ones you aren't interested in. Most of the package managers in Linux are excellent at removing all traces of a program that you wish to remove from your system.

### 9. Ignoring the system messages and errors.

Just as with any operating system, you will encounter errors from time to time. It's inevitable, since modern day computer operating systems are very complex and intricate animals. When you encounter those errors, pay particular attention to not only the error, but also any accompanying messages that come up with that error. Not only will the error message be important in troubleshooting your problem, but the accompanying message will often give you a tip on what you may need to do to rectify the situation.



Also, it's a good idea to jot those messages down on a nearby pad or notebook. This way, should you find the need to ask for assistance in the community help

forum, you can provide the exact error message and the accompanying messages in the statement of your problem. This will help those resident "experts" direct you in the proper direction to solve the error. Once you solve the problem, write the solution down, under the error, on the same pad or notebook page. If you ever experience the problem again, you will already have the solution at hand. Not only will that help your situation become a learning opportunity, you will be in a position to assist others in the forum who may experience the same problem down the road, in a "pay it forward" type of situation.

### 10. Giving up too easily.

Unfortunately, this one happens all too often. Face it: you were not born knowing how to run Windows, or OS X, or any other computer operating system.

There was a time when even all of that was new and foreign to you. Try to remember the first time you ever sat down in front of a computer. You had to spend the time and put forth the effort to learn your way around, and to learn the ins-and-outs of whatever operating system was installed on that computer. Linux is no different.

The internet is ripe with reports of folks who have tried Linux, given up, and now proclaim that "Linux sucks." Those are the people who didn't invest the time and effort into learning Linux, as they once had

to do with the operating system they have become accustomed to. Remember point #3 above: Linux is NOT Windows, or OS X, or whatever other operating system you've ever used. There will be things that you will have to learn. The advantage is, depending on which Linux distribution you choose to go with, that many of your skills that you developed while working with that other operating system will also be useful and transferable to Linux.

PCLinuxOS has a reputation of being one of the easiest Linux distributions for users transitioning from Windows to use. But that doesn't mean that you won't have new things to learn. If you invest the time and effort, you will be rewarded by being able to run an operating system that is not only much more stable than your old one, but also much more secure. And, even though PCLinuxOS has the reputation of being one of the easiest Linux distributions for users transitioning from Windows to use, you will find that PCLinuxOS is also very well suited for experienced Linux users, since none of the power of Linux is sacrificed in providing that ease of use.

After all, PCLinuxOS is "Radically Simple."



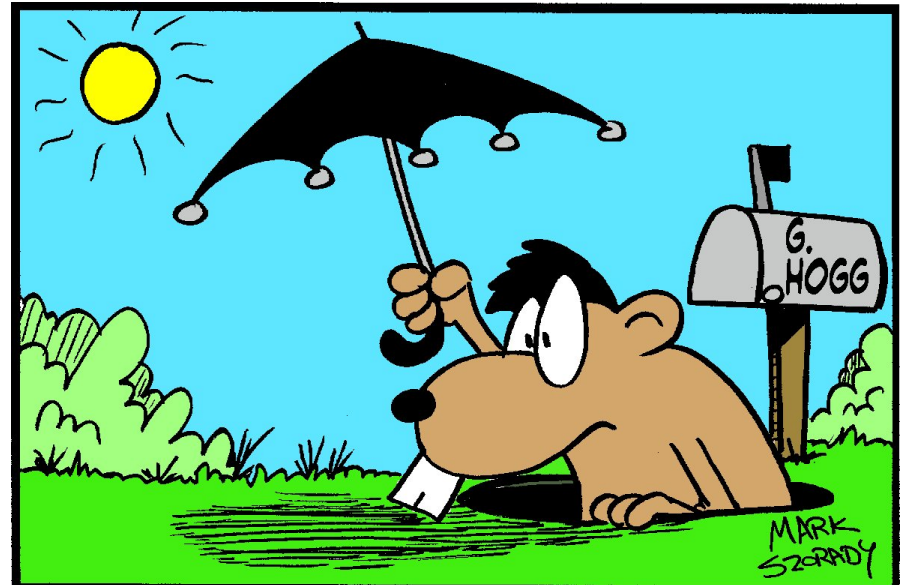
# Double Take & Mark's Gimp Tip

Double Take

by Mark Szorady



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Find at least seven differences between cartoons.

Answers on Page 13

## Mark's Quick Gimp Tip

Plug in to the power of The Gimp with Plug-Ins! The Gimp, like other popular graphic apps, extends its power and functionality through the use of third party plug-ins. Wikipedia defines Plug-Ins as, "In computing, a plug-in (also called plugin, addin, add-in, addon, add-on, snap-in or snapin, but see also extension) consists of a computer program that interacts with a host application (a web browser or an email client, for example) to provide a certain, usually very specific, function 'on demand'. " The gimp has hundreds of plug-ins available. They are designed by Gimp users for Gimp users and are completely free of charge. All

you need do is log into the Gimp Plug-In registry at <http://registry.gimp.org/>. For instance, I needed to take one of my cartoon characters and turn it into an icon. I simply searched the registry for "Iconify" and found the Plug-In called Iconify2.scm. After downloading, I dragged the .scm file into /.gimp-2.6/scripts. The next time I booted Gimp, the plug-in was in the "Script-Fu" menu and found Iconify2. With two clicks, this plug-in took my cartoon character Elbie and created an icon! As you search for plug-ins you'll come across both .scm files and .py files. As a general rule, .scm files are placed in /.gimp-2.6/scripts and .py files are placed in /.gimp-2.6/plugin-ins. The Gimp Plug-in Registry has hundreds of plug-ins available at

your fingertips! And like [PCLinuxOS](#), The Gimp Registry has a friendly community forum to help you along!



-Mark Szorady is a nationally syndicated cartoonist. His work is distributed by [georgetoon.com](http://georgetoon.com). Email Mark at [georgetoon@gmail.com](mailto:georgetoon@gmail.com).



# Happy Birthday Texstar Shine

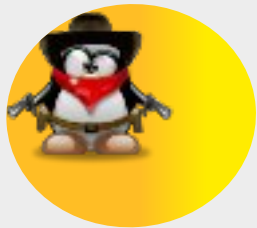
Happy Birthday Texstar Shine we want you to know  
What you create for us we love it so  
Happy Birthday Texstar Shine you lead us along  
My friends and me as we sing our PCLOS singing song



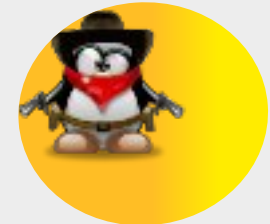
MP3



OGG



Grubby Grubby Grubby we're your fan clubby la la la lo  
Linny Linny Linux we all love Texas le le le lo  
Rooty Rooty it's the best PCLOS hear our singing song  
Singing a song humming a song singing a song  
Down loading PCLOS without any stress you can't go wrong  
Sing the song song the sing  
Song song song sing sing sing song



Happy Birthday Texstar Shine we give you a cheer  
Our thanks to you are so sincere  
Happy Birthday Texstar Shine you're still going strong  
My friends and I will have PCLOS our whole life long

# Gadgets & Gear: Canyon Notebook Stand

by AndrzejL

Many times on our forums, I have seen a topics starting with a subject line, "My laptop/netbook is overheating. What can I do?". Most common reasons were that the CPU was working at its top speed, due to a process running wild. Or, a ton of dust was clogging the fan and radiator. But what if that is not the problem? What if the designers of the machine saved few €/£ or \$ or whatever the currency is used in your country? What if the computer really needs a better cooling solution?

I know! Lets disassemble it and make a holes in the cover so the machine has better ventilation. NO! Lets not do that. Making holes in the laptop case is not a way out of this situation. So maybe I could gently open the case, and put a bigger fan into it. No. Lets not do that, either. Opening the case/replacing any parts inside (if you're not a trained/skilled computer maintenance technician) can be dangerous for you, and for your gear. It will void the warranty of the computer, too. What can I do then, you ask? Well, then how about this:

<http://www.canyon-tech.com/products/companions/nbstands/CNP-NS1>

You could go to the computer store, and ask for a notebook stand with the fan built in. I kid you not. I got one myself. I bought a notebook stand from Canyon (<http://www.canyon-tech.com/>), marked with a s/n

CNP-NS1. It was €23 (about \$32.50 in US dollars) in my local computer store, which means you can get it much cheaper if you live in bigger city where the competition won't allow a single, monopolistic shop to set unrealistic prices. As you can see on the product site, you can buy different versions of the stand, including the smaller version (<http://www.canyon-tech.com/products/companion/s/nbstands/CNP-NS3>).

Notebook stand. What can one expect from it? I didn't know until I got one, to be honest. What does mine have? It has:

- 360-degree swivel base – Nice feature that allows you to turn your notebook around

- Ergonomic adjustable stand – Ergonomic. Well it does looks nice/cool to me.

- Ultra silent fan – I can barely hear it and the computer's temp is down a bit. The case is not getting hot anymore.

- USB power supply – For the fan.



- Unique cable storage design. - Errrr, I know nothing about cable storage designs, to be honest. It does it's job. That's all I know.
- Design for up to 17" notebook – I bet it is, and I wish I had a 17" lappy to test it.

To be honest, it's a very cool gadget, and ever since I bought it, I've been happy with it. What I like about it most? I can barely hear the fan, and it makes my Acer Travelmate 2420 work a bit less noisily. The computer's temperature is down, which

makes the internal fan work on a lower speed setting. That will probably allow the fan to live longer. Also, the keyboard is not getting hot, which used to be the case. And, on the top of that, it makes my old machine look cool.

What does Canyon says about it's product on it's web site?

**"Notebook stand with adjustable rotating base and silent USB-powered cooling fan.**

**This notebook stand allows positioning the notebook so that its screen is at a height of your eye with viewing angle close to 0° - the position recommended by ergonomics experts. Stand also includes cooling fan to improve heat dissipation thus ensuring maximal performance**





and system stability. If the laptop is not very hot even under heavy loads, you may easily unplug the cooler from USB port and hide its cable into special notch.”

Would I recommend it? Yes. It does the job.

Was it expensive? No, in my opinion it was not very expensive. And, it helps avoid a larger expense, since heat can kill a processor and various other computer parts.

Did it work up to my expectations? Definitely. I have had it for over a month, and I've had no complaints so far.

If you have a heat problem, and you have tried everything so far and nothing worked, give it a go. The only thing you have to lose is the use of your computer, due to heat damage.

*Do you have a piece of equipment that has made your computing life easier or more pleasant? Have you recently bought a piece of computer equipment that you have found to work with PCLinuxOS? If so, please let the magazine staff know, and we'll consider featuring it in an upcoming Gadgets & Gear column.*

**Answers to Mark Szorady's Double Take:**

**(1) Hole smaller; (2) Nose smaller; (3) “hog” changed to “Hogg”; (4) Umbrella wider; (5) Mailbox shorter; (6) Hair added; (7) Fence missing**

## Screenshot Showcase



Posted by Blackbird, January 21, 2010, running KDE 4

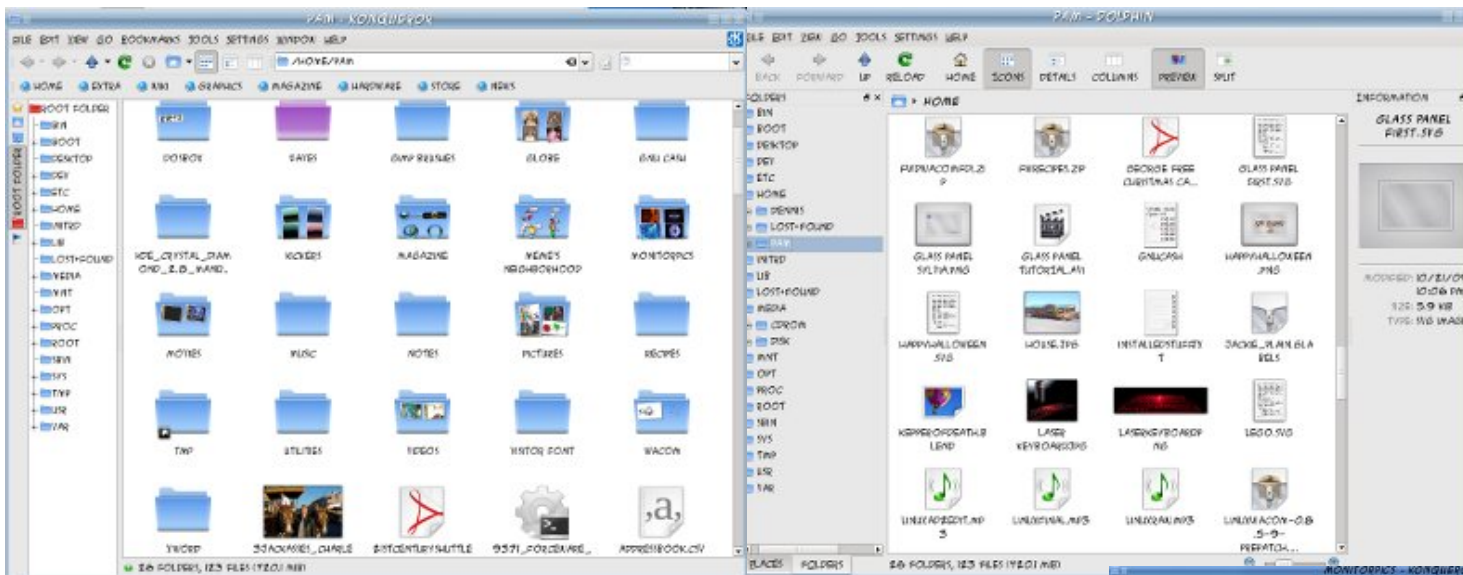
# KDE 4: Dolphin or Konqueror?

by Meemaw

I recently made the switch to KDE4, and was greeted with a new file manager called Dolphin. While I have used Konqueror for almost four years, I decided I'd try Dolphin while still using Konqueror. I wanted to see just how much they differ, rather than just deciding there was something

wrong with Dolphin, just because it didn't look exactly like Konqueror. After using them both for about three weeks, I've found that they are actually much more alike than one would think.

If you open Konqueror, then open Dolphin right next to it you should see basically the same thing. The arrangement of each window is pretty much like the other, and the default location that opens is your /home folder. Default in Dolphin is single-click to open a file, but you can change it if you wish. (If I remember correctly, it was that way in Konqueror as well, but I'm used to double-clicking, so I changed mine.)



at the bottom.) However, the two file managers can be configured to look almost exactly alike if you wish.

The **Location bar** is just a little different. In Konqueror, it is in the toolbar to the right of the buttons; in Dolphin it is a little more hidden, being just above the view window where your home folder is displayed.

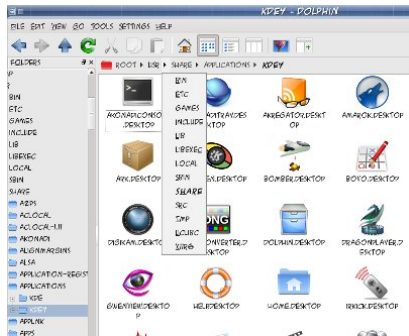
So, now let's compare:

Konqueror	Dolphin
<b>Places</b> pane is narrow at left side of window	<b>Places</b> pane is larger at left side and can be toggled to view or not. It can also be moved to the right side of the window if you desire.
<b>Folders</b> pane is at left side of window	<b>Folders</b> pane is at left side of window, but can be moved to right.
<b>File Information</b> is generally seen by hovering the mouse over the file or right-clicking and choosing Properties	<b>File Information</b> is seen in the Information pane (if toggled on) as soon as the mouse pauses over the object.

In Dolphin, these three items can be toggled on and off in View > Panels, and can be placed at the left or right side of the window, or even stacked on top of each other with tabs for each one. I have Information on the right and Places and Folders on the left (tabs

You can do something in Dolphin's location bar that you can't in Konqueror. Say you are looking for something in /usr and have gone 'in' several folders. Now look at your location bar in Dolphin. It shows the path you are on (just like in Konqueror). However, maybe you think it's back up the tree in another folder, but you don't want to lose this location. Go to your location bar and click on the arrow to the right of the directory you think you want. You'll get a drop menu of the folders under the location bar, and you can see if the one you are looking for is there. (Notice the one you are in is in Boldface.)

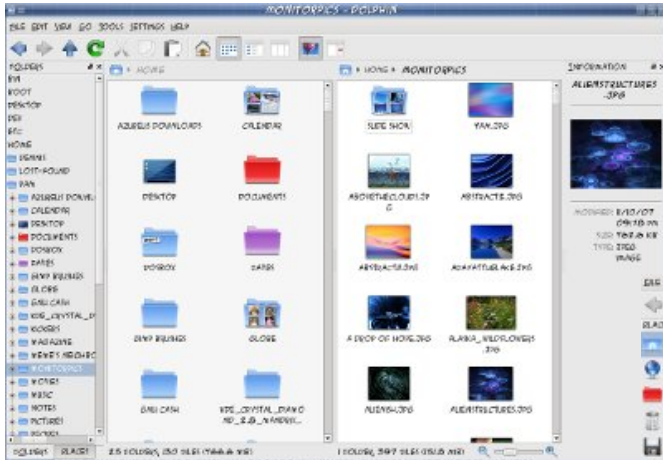




**Split View** is possible in both Konqueror and Dolphin. In Konqueror, it is under Window > Split View. In the default setup of Dolphin, there is a button on the toolbar.

Above - Back through the tree

Below - Split view



**Tools** - The two main tools are 'Find File' and 'Open Terminal' and are present in both file managers. However, in Dolphin you can open a terminal within the Dolphin window as well. Simply go to View > Panels and choose Terminal.

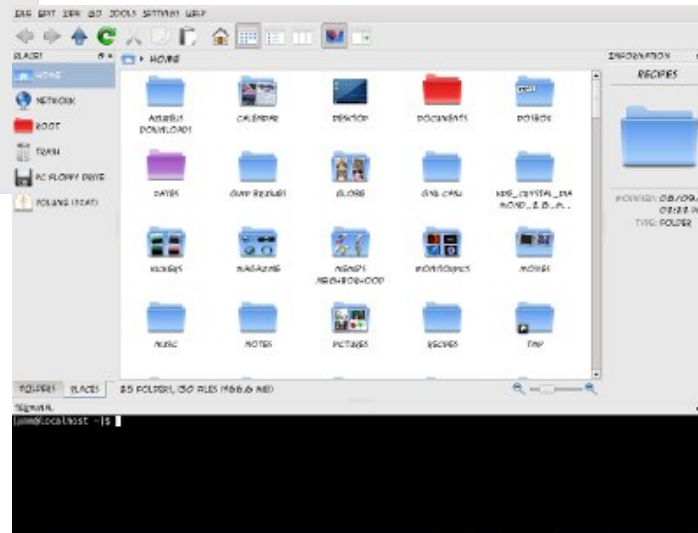
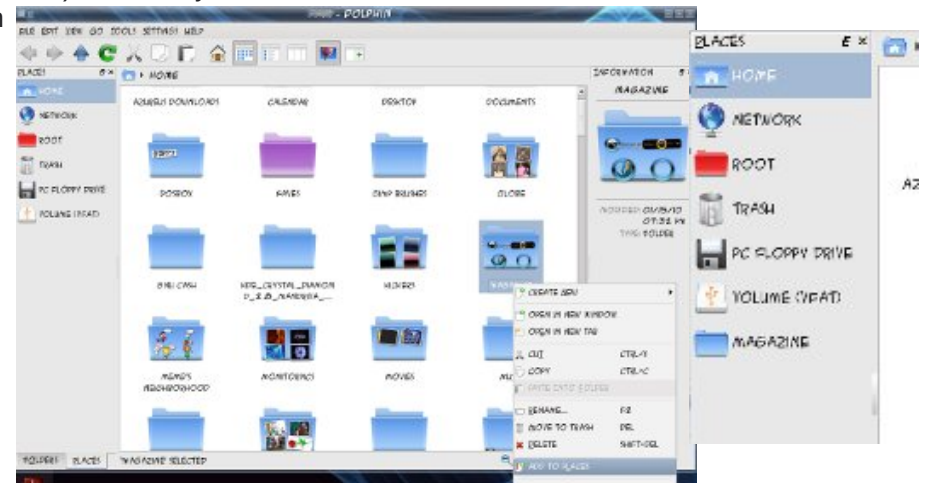
**Bookmarks:** each program can use Bookmarks. There are three types - web bookmarks, places and application.

**Web bookmarks** are used by Konqueror when it is being used as a web browser.

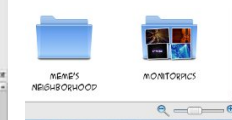
**Places** (both applications use these) are usually only those places on your system you access regularly or want to remember - like the Places menu in System. You can right-click a folder in Dolphin, choose "Add to Places," and it will be added to the places menu. (I added my Magazine folder to Places.) --->

**Application bookmarks** can be accessed from any KDE application, if you wish. If you store all the photos you took on your trip in a single folder for use in Gwenview, for example, you can bookmark that folder. It is

then available in any other KDE program. You first have to enable bookmarks in one of the KDE programs.



There are a couple of neat little features in Dolphin you might like. Hover your mouse over a file or folder... see that plus sign? It allows you to select that item. Now do it again with another item... you can select as many files or folders as you wish (in case you want to move some things around.) We've always selected multiple files by holding down CTRL and clicking away, but this method works too. If you select one by mistake, you can go back to it and click the minus sign that's there now and Dolphin will remove it from the selections.



Also, see that slider at the bottom of the window? You can change your icon size just by sliding the slider to the right. I

like it because it's right there and I don't have to go into the menu at all (Lazy? Probably!!!)

There's much more, but this will get you started. I found that either of the file managers works equally well, plus there are a few extra things that Dolphin can do.

You can also visit [http://userbase.kde.org/Tutorials/File\\_Management#Discover\\_Dolphin](http://userbase.kde.org/Tutorials/File_Management#Discover_Dolphin) for KDE's Dolphin tutorial.



Want to keep up on the latest that's going on with PCLinuxOS?

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<http://twitter.com/iluvpclinuxos>

## Screenshot Showcase



*Posted by Texstar, January 1, 2010, running KDE 4*



# Forum Foibles: Be My Valentine

*Got a honey who is waiting  
who is wondering and more?  
What you're gonna give him/her  
and just what is the score?*

*Well you might try roses  
and candy is really nice  
But Tex has made something  
and you'll really like the price*



*It comes on a disk  
wrapped up all in blue  
It's the darling of the Linux World  
from here to Kalamazoo*

*So surprise your little sweetie  
you'll be a great success  
Give her/him the OS  
that's called PCLOS*

*ms\_meme*

# KDE 4: Introducing Plasma

by Paul Arnote (parnote)

By now, anyone who uses Linux has heard of the new KDE 4. The KDE developers no longer call "it" a desktop environment, or DE. Nope. Now, it's known as KDE SC, or *Software Compilation*.

One of the cornerstones of the new KDE 4 SC is *Plasma*. In fact, Plasma is your desktop. It's everything you see on your screen when you start up KDE 4. It's the panel(s), the desktop, application launcher – the whole she-bang.

Plasma is a whole new way of looking at the desktop. Sure, you can make it look like and have virtually the same functionality as the KDE 3.5.10 desktop. But then, you'd be missing out on some of the new features that Plasma delivers. So, let's take a look at Plasma, how it changes the desktop metaphor, and the things you can do with it.

At right is what a typical Plasma desktop looks like.

There are three principal components of a Plasma desktop. They are: the panel (often referred to as the "task bar," and defaults to the bottom of the screen), the desktop (the area occupied by the wallpaper and where any Plasma widgets are placed), and the Plasma toolbox (represented by the "cashew" in the upper right corner of the screen).

You use Plasma just as you would any other desktop on most any other computer operating system. You launch your programs from the KMenu, you view the currently active programs in the panel, access programs from the panel tray, etc. Much of



that is just as you have become accustomed to while running the previous versions of KDE.

An important part of Plasma is the widgets, also called *plasmoids*. Widgets are individual parts of the desktop metaphor. They can include, but are not



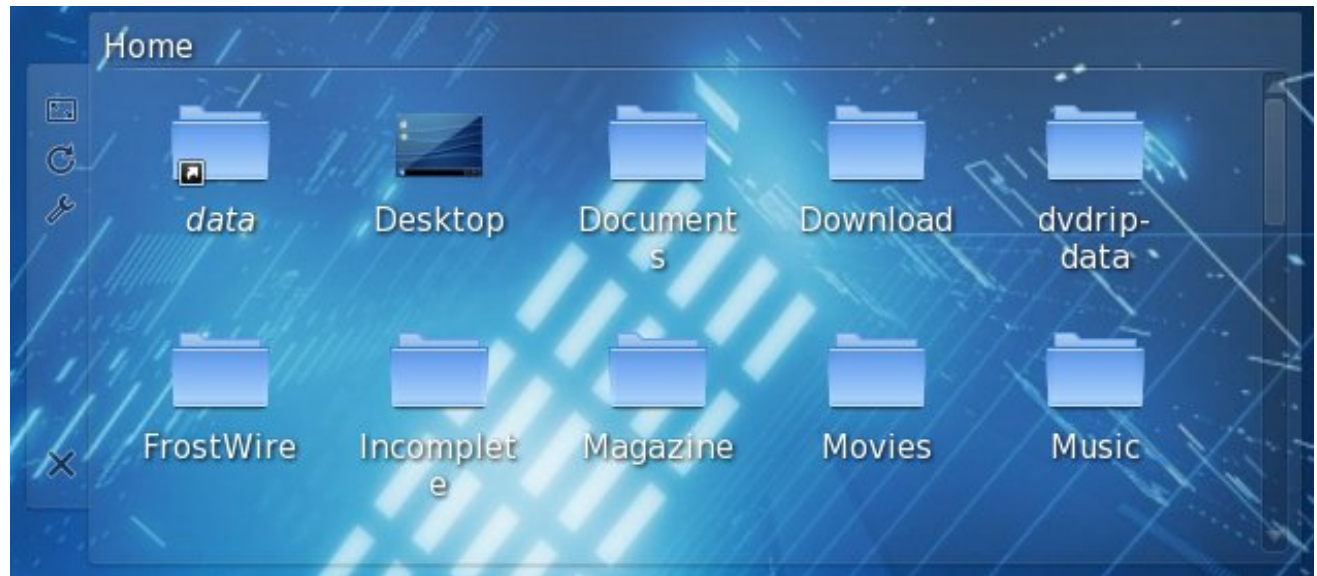
limited to, the panels, the clock, the system tray, icons and folders, weather forecasts, the trash can, photo slide shows – the sky is the limit, limited only by the imagination of the widget authors. In fact, panels and desktops are widgets, who's job it is to contain other widgets. In Plasma, these are called "containments."



The key to using widgets is the Plasma toolbox, commonly referred to by many simply as the "cashew." From the cashew, you can add or delete widgets from your desktop or panels, lock the widgets, or several other functions. You will also find the cashew on some widgets, as well as some panels (like on your main panel, usually located at the far right side of the panel).

One thing you are likely to notice is that there are no icons placed on the desktop, as many users sometimes like to do. Rather, icons are placed in a container, called Folder View. One advantage is that you can have multiple Folder View widgets on your desktop, each pointing to a different directory on your computer. In this way, it makes it easier to organize your desktop, and to group your icons together.

Once on your desktop, widgets can be configured via the *widget handle*. The widget handle is displayed when you mouse over the widget, but only when widgets are unlocked, via the Plasma toolbox cashew. With the tools on the widget handle, you can resize the widget, set options for that widget, move it about your desktop, and delete that particular widget from your desktop.



Clicking your mouse on an empty part of the handle will allow you to drag the widget to the desired location on your desktop. By clicking on the first tool in the widget handle, you can resize the widget. The second tool will allow you to rotate the widget. Click this tool and rotate the widget to the desired angle. The third tool (the wrench) allows you to access the configuration parameters for that particular widget. The last, and bottom, tool allows you to remove the widget from your desktop.

As surprising as it may seem, not only widgets that are written specifically for Plasma can be used, but you can also use widgets created for Google Gadgets and Dashboard Widgets from Mac OS X. These may be installed from "Get Hot New Stuff," a KDE module scheduled to become a part of the KDE libraries (kdelibs).

Plasma also brings a new way to work with your desktops with something called *activities*. Activities allow you to define different widgets (and wallpapers) to each of your virtual desktops. There is, understandably, a limited amount of real estate on each of your different virtual desktops. As a result, you may not be able to place all the widgets you want to use on your desktop, without it appearing cluttered and crowded. By using activities, and defining different widgets for each desktop, you can maximize the placement and use of a greater number of widgets. You set these activities by clicking on the Plasma toolbox (cashew), and zooming out to display all of your desktops on one screen. Then, select "Use a different activity on each desktop." That is all you have to do to set up different activities for each desktop.

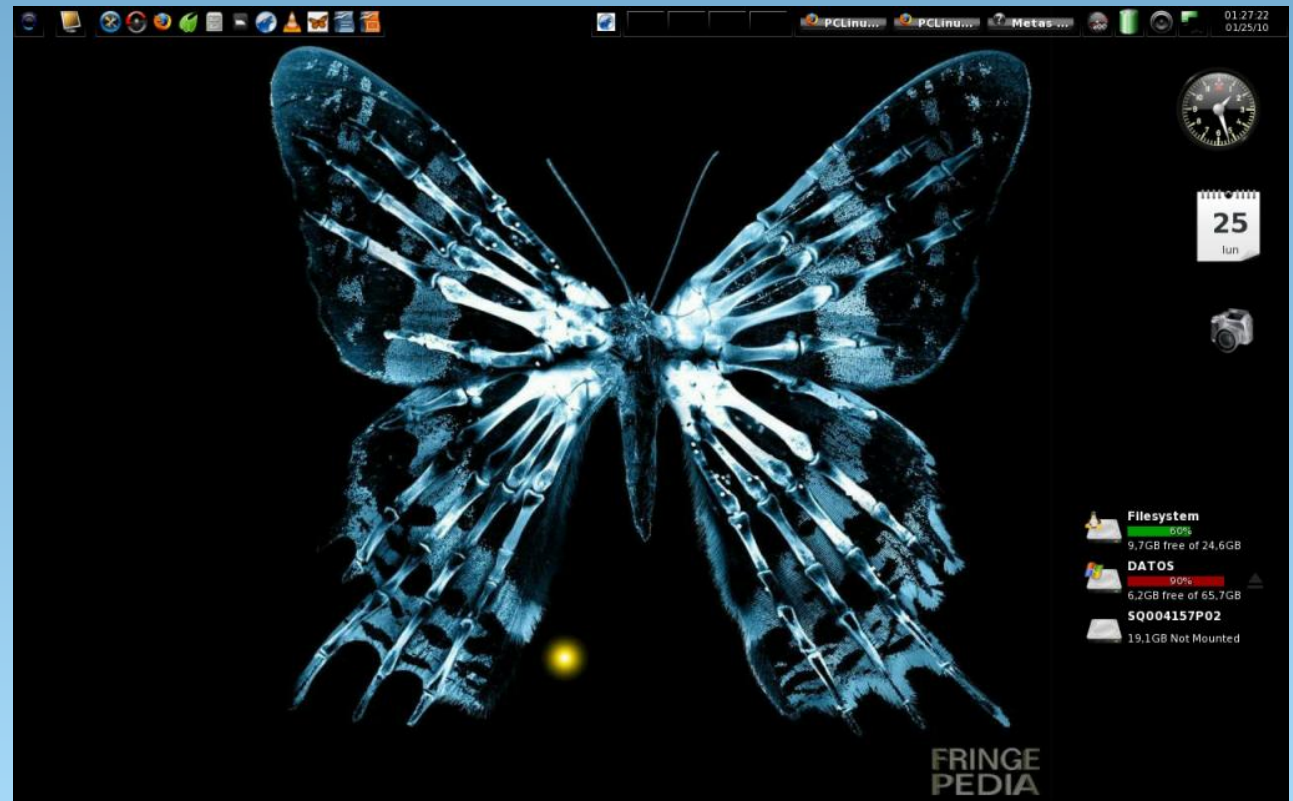
Say that during your "day job," you are working for a financial consulting firm. On your "off hours," you are writing the next bestselling novel. You also have a vast personal photo collection of your kids, grandchildren, and other significant members of your family. In your "free time," you are working to learn packaging. Now, with activities, you can devote each of your desktops to a particular activity. So, on Desktop 1 you have all of the files related to your job with the financial consulting firm. On Desktop 2, you have all of the files related to your creation of that next bestselling novel. You can place multiple picture frames and slide shows on Desktop 3, displaying your picture collection of those who are dear to you. And finally, on Desktop 4, you can have all of the files that are related to your efforts to learn packaging in yet other Folder View widgets. I think you should be able to catch on to the idea being put forth here.

Overall, the KDE developers have made great efforts to extend the usefulness and flexibility of the computer desktop. Do you have to use these new features? Certainly not. There is a setting in KDE 4 SC to change your desktop from one that utilizes Folder View, to the more traditional Desktop View that you have most likely become familiar with under KDE 3.5.10. But, under the Desktop View, you may lose, to varying degrees, the ability to utilize the newer features that Plasma brings to the KDE 4 SC desktop.

After all, Linux IS all about choice.



## Screenshot Showcase



*Posted by Crow, January 25, 2010, running e-17*

# KDE 4: Plasma FAQ

From the [KDE 4.3 Userbase Plasma FAQ](#)  
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*Editor's Note: With the impending change to KDE 4.x inevitable, especially since support for KDE 3.5.x officially ended October 31, 2009, there are bound to be lots of user questions concerning KDE 4.x, and the direction that the KDE developers have chosen for KDE 4 SC. This FAQ goes a long way in answering many of the questions that KDE 3.5.x users may have, and may help users making the transition adapt to those changes quicker. This FAQ covers up through KDE 4.3.x. KDE 4.4.x is due out this month, February, and should be applicable to it, as well. — Paul Arnote, PCLinuxOS Magazine Chief Editor.*

## General Questions

### What does Plasma do?

Plasma is the desktop interface for KDE SC 4, including the application launcher (start menu), the desktop and the desktop panel (often referred to simply as the task bar). However Plasma is more than just this familiar collection of utilities, it is a common framework for creating integrated interfaces. It is flexible enough to provide interfaces for mobile devices, media centres and desktop computers; to support the traditional desktop metaphor as well as well as designs that haven't yet been imagined.

### What is wrong with the current desktop technology?

Today's desktops are static. Typically they are tied to a folder in which one can find icons (application launchers), or user-placed documents and folders. Along with pictures and images as backgrounds, the current desktop doesn't go any further, or work for the user. Plasma takes a different approach, engaging the user by creating a dynamic and highly customizable environment.

### I don't think it's such a good idea...

With Plasma, you can let your desktop (and accompanying support elements) act like it always did. You can have a task bar, a background image, shortcuts, etc. If you want to, however, you can use tools provided by Plasma to take your experience further, letting your desktop take shape based on what you want and need.

### How does Plasma work?

Plasma's components are widgets called *Plasmoids*. Plasmoids can take on a variety of functions, ranging from displaying your desktop and associated wallpaper, showing your laptop's battery level, displaying your plugged in devices, and drawing the taskbar: basically, they are small applications that live on the desktop. Plasmoids can be grouped together in "containers" called containments. On a default desktop, there are two main elements: the Panel and the desktop itself. Both are containments in the Plasma sense.

### It doesn't sound too new... other operating systems have done that.

The key difference here is that plasmoids can interact together. You want a better view of your laptop battery in order to find out when you are running low? You just drag it away from the taskbar and put it on the desktop. Also, applets can be resized and rotated at will, thanks to the use of Scalable Vector Graphics (SVGs). As you can see, the desktop not only interacts with you, as the user, but also with itself in new and interesting ways. You are now able to control how your workspace behaves and what it displays, in a visually pleasing and user-friendly manner.

Since Plasma is the sum of its plasmoids, every element, even the desktop itself, is a widget. This allows you to move your desktop anywhere with respect to the windows (back and forward). It is no longer rooted behind everything and becomes instead another element of real interaction.

### Kicker and Kdesktop were working fine in KDE 3. Why did you have to change that?

Especially regarding kicker, there was the important issue of maintainability. The code was in place since the KDE 2 days, and it was difficult to add new features without breaking others. In the end, to proceed forward the only viable option was to start anew from scratch.

### I can't find my favorite <insert feature here>!

Don't forget that the Plasma Desktop is still in heavy development and that KDE 3 was an extremely polished codebase: it took seven years to get to that, while Plasma is much younger. With time, the



Plasma developers plan on reintroducing features that are missing and fix regressions. As it progresses through the KDE SC 4.x cycle, Plasma will improve with it.

### Why was the way the desktop operates changed?

The idea of a Desktop folder is fundamentally a broken concept. It assumes that everything you will access there resides on a single physical directory on your disk. It may be convenient, but at the same time it greatly limits what you can do. For example, you can't use custom layouts for different desktops, as everything would be read from the directory. Also, quite often a desktop structured like that becomes a dumping ground for files and folders, without any other function.

### I heard there are no more icons on the desktop...

That is not entirely correct. You can have icons and launchers (shortcuts) by dragging them from Dolphin or the K-menu. What has changed is that the desktop will no longer display the contents of the Desktop folder. However, you can show an arbitrary number of folders (local or remote) on your desktop view, instead of being forced to display only the contents of the "Desktop" folder. To do so, the Folder View applet comes into play.

Also, should you wish, you can replicate the "icons on desktop" paradigm with minimal effort.

### What is the Folder View applet?

The Folder View applet, like its name says, is used to display items (folders, files) from a directory. Such a directory can be either a local one residing on your computer, but also a remote FTP, SSH, or SMB share. In the future, it will even contain results from Nepomuk searches and tagging.

You can choose to view either all files, or filter either by specific regular expressions (e.g., all files with a certain extension) or by file type (for example, just images).

This applet also supports basic file management properties (moving, copying, cutting and pasting for example), and you can have as many as you want on your desktop.

Lastly, you can use one Folder View as the whole desktop, effectively replicating the "old style" paradigm.

### What's the deal with Kickoff (the new K Menu) ?

During the development of KDE 4.0, different approaches for a [K menu \(application launcher\)](#) were tried. Some projects were ambitious but there was no way they could be completed on time. At the time, one developer ported SUSE Linux's application launcher ([Kickoff](#)) to the new KDE desktop architecture. As it was the most ready and feature complete (not to mention the product of usability testing) it was chosen to be the default menu. If you don't like it, the traditional K-menu is available as well - right-click onto the K Menu to find an option "traditional style". Also, some alternative menu systems have been announced and some, such as

[Lancelot](#), are ready for daily usage and offer exciting new features.

### What is KRunner?

KRunner is the versatile mini-command line you can activate by pushing "Alt-F2" or by selecting "Run Command" from the desktop contextual menu. It can search for applications, bookmarks, even sessions basing on your input, show system activity and even do simple arithmetic calculations.

KRunner's functionality can be extended through the use of plugins ("runners").

### What are the "cashews"?

What is commonly referred as "cashew" is the Plasma logo you can find on the default desktop, on the upper right corner, and on the panel, on the right hand side (left hand side if you use a Right-To-Left language). By clicking on them, you can access other configuration options, such as panel configuration and the Zooming User Interface (ZUI). Some of these, like the panel cashew, only appear if the widgets aren't locked (see below).

### Please provide an option to disable the upper right cashew.

Although putting an option to disable the cashew for desktops sounds reasonable, from a coding point of view it would introduce unnecessary complexity and would break the design. What has been suggested is, since the desktop itself (a containment) is handled by plugins, to write a plugin that would draw

the desktop without the cashew itself. As a matter of fact, some distributions ship already a "Desktop without cashew" plugin.

### What is the Zooming User Interface (ZUI)?

The Zooming User Interface, or ZUI, is another component of Plasma. It enables the user to group different groups of plasmoids together, and to quickly switch between one and another using a zoom-and-pan approach. Notice that at the time, although significant improvements have been made, this feature is still under heavy development and may be fully functional only with later KDE SC 4.x releases.

### How does the ZUI work?

Suppose you have three groups of plasmoids (such as widgets, application launchers, etc.) which you want arranged in specific combinations depending on what you want to do. You first group them according to your tastes, then you can switch between them by zooming out (getting a preview of all the groups) and then back in on the specific group you want to use. Notice that it is different from traditional X11 virtual desktop switching, as there is a higher degree of flexibility by using this approach, as the groups can be totally different from each other.

A very good example of this behavior is shown by [this image](#) courtesy of Half-Left from #kde on freenode.

That said, you can tie virtual desktops to ZUI activities.

### Why can't I use the ZUI from Dashboard view?

That feature is a work-in-progress. We're looking into it, but can't yet say how and when it will be finished.

On multi screen setups, the ZUI operates on all screens, the Dashboard just on one. Why is that?

The workflows are different. When zooming out, the user wants to get an overview, therefore activities on all screens are zoomed out. Whereas when using the Dashboard, the user usually wants to access specific functionality and might not want to interrupt his or her workflow on other activities.

## Configuration

### Can I place icons on the desktop?

Of course you can. Dragging an icon from Dolphin or Konqueror to the desktop will work. Notice that dragging on the desktop will not actually create a file there, just a link to it.

To display the contents of your Desktop folder, or any other folder, use the Folder View applet.

Alternatively, right-click on an empty area of the desktop, select "Desktop Settings" and in the dialog that will pop up locate the "Desktop Activity" text. Click on the "type" combo box and select "Folder

View". Click OK and you will have a Folder View applet as desktop (showing the contents of the Desktop folder by default), like the "old style" paradigm.



**TIP**

If your widgets are locked, you must first unlock them, using the right-click menu.

### I am using two screens, and I used to have a kicker over the two displays. Can I do that with Plasma?

No. The reason is that having a panel over two displays adds a great deal of complexity, especially when the two displays have different resolution. As a result of this added complexity, this feature would not be guaranteed to work in all cases, hence it was not implemented.

### Can I put the panel on only one screen?

All Plasma panels live in one screen. If you want panels on multiple screens, you can add panels and drag them to your preferred location using the panel controller you get when clicking on the Plasma icon in "Unlocked" mode.

### How can I add applets to the panel?

Method 1: Open the Add Widgets dialog in the Plasma cashew (upper right corner of the screen) then select the widget of your liking and **drag it directly** (don't double click or use the Add Widget button) to the panel.



Method 2: Drag an applet from the desktop to the panel.

Method 3: Click on the cashew on the panel, and select "Add widgets". Once you have selected the applet, it will be automatically added to the panel.

### Can I move the applets on the panel?

To do so, open up the panel controller (by clicking on the cashew or by right clicking on the panel and selecting "Panel Settings") and hover the mouse cursor over the applets. Its shape will turn into four arrows, and you'll be able to rearrange the applets as you wish.

Lydia Pintscher's blog has a [video showing movement in action](#). Another one is available on [Aikurn's blog](#). Aikurn has also made an [annotated video](#).

### How can I change the height and the size of the panel?

Click on the panel cashew (the small icon on the right side of the panel) to open the panel configuration interface. By clicking on "Screen Edge", you can position the panel on any of the edges of the screen. Clicking on height and dragging increases or decreases the size of the panel.

The arrows on the sides of the panel define its size: there are two, which define "minimum" and "maximum" sizes. The maximum size is the size at which the panel can expand when items are added, while the minimum size is the minimum size the

panel can have. If they are set differently, the panel will readjust its size depending on the contents.

Under "More Options" there are additional options to align the panel and configure its behavior.

### Can I auto-hide the panel?

Open the panel controller, select "More Options", then click on the relevant option.

### How can I remove a panel?

Click on the panel cashew, click on "More settings", then select "Remove this Panel". Alternatively you can right click on the panel itself, select "Panel options" and choose "Remove this Panel".

## General Panel Configuration Help

[This forum page](#) gives an illustrated guide to configuring the panel.

### I heard that you can use OS X's widgets with Plasma. Is this true?

Yes, Plasma can use OS X's widgets. Work has been done to implement also Javascript-based widgets (reverse engineered due to Apple's license).

### How do I move, rotate or resize an applet on the desktop?

First of all, hover over the applet you want to resize. The applet handle will appear.

The applet handle takes care of resize, rotate and move.

\* To move an applet: Click on the handle, then drag the applet around.

\* To rotate an applet: Click on the curved arrow then drag to rotate

\* To resize an applet: Click on the square icon and then drag to resize the applet. You can constrain the resize operation to the applet's aspect ratio by holding down the Ctrl key.

### My widgets are hidden under the windows. How can I show them?

You can bring all the widgets to the front by pushing Ctrl-F12, which will bring the Plasma Dashboard to the front. When you are done, you can either push the Esc key or select the "Hide Dashboard" option from the cashew.

### How can I lock the positions of the widgets?

Method 1: Right click on an empty area of the desktop and select "Lock Widgets" from the contextual menu. If you want to reverse that, right click again and select "Unlock Widgets". The same option is available if you right-click on the panel.

Method 2: Select "Lock Widgets" from the Plasma cashew on the upper right corner or from the panel controller.

**How do I remove widgets?**

If they're on the panel, right click on the widget and select "Remove this...". If the widgets are on the desktop, you have different options:

\* If you hover over them, clicking the X on the applet handle will remove them;

\* If you use the Add Widget dialog, you can click on the minus symbol icon next to the widget name to remove it.

**How do I switch between Kickoff and the old style menu?**

Right click on the menu icon and select "Switch to Classic Menu Style" (if using Kickoff) or "Switch to Kickoff Menu Style" (if using the classic menu). Alternatively, you can add either type of menu using the Add Applets dialog.

Aikurn has [a video](#) showing how to switch between the different styles.

**How can I add/remove an activity?**

Adding an activity: Zoom out from your current desktop view by clicking on the desktop view cashew (the icon in the top right corner) and selecting Zoom out. You see a toolbar under your current desktop. Click on "Add Activity" to create a new desktop view.

Removing an activity: Zoom out from your current desktop view and select the red cross from the toolbar that will appear to remove the activity.

Note: You must Unlock Widgets (Ctrl+L) before you can remove any activities.

KDE Forums user Fengshaun has made a [screencast showing ZUI usage](#).

**How can I quickly move between Activities?**

The ZUI method is rather slow, so a better way is to use an Activity Bar. A short [how-to here](#) explains exactly what you need to do.

Are there any keyboard shortcuts for Plasma?

In addition to the mouse, there is a number of shortcuts available:

- \* Lock widgets: Ctrl-L
- \* Zoom out: Ctrl- -
- \* Zoom in: Ctrl- = or Ctrl-+
- \* Next applet: Ctrl-N
- \* Previous applet: Ctrl-P
- \* Add activity: Shift-Ctrl-A
- \* Next activity: Shift-Ctrl-N

\* Previous activity: Shift-Ctrl-P

\* Applet settings: Ctrl-S

\* Remove applet: Ctrl-R

To change shortcuts, click on the desktop cashew and select "Shortcut settings".

**How can I associate a keyboard shortcut with an applet?**

Simply select an applet's settings (the wrench icon on the applet handle) and then click on "Keyboard Shortcut". You will then be able to define a keyboard shortcut for your applet. Notice that some applets do not offer this feature (generally the ones that have no configuration).

**Can the Dashboard show widgets other than those on my desktop?**

Yes, it can. To configure it, click on the desktop cashew and zoom out. Choose "Configure Plasma" from the toolbox that it appears, and check the "Use a separate dashboard" option. Click on OK and you will have a different dashboard than your desktop when you access it.

**How can I use virtual desktops as activities ?**

Zoom out by clicking on the desktop cashew and a new toolbox will open. Click on "Configure Plasma" then check the box "Different activity for each virtual desktop". Click on OK and you are done.



### Notifications take up too much screen - can I get rid of them?

For those who do not like it, there is a simple way to disable them. Right click on the system tray notification area (the "i" icon) and select "System Tray Settings".

There you will have the options of disabling notifications for applications or for jobs (such as file transfers) by unchecking the relevant check boxes.

## Theming

### I don't like the default look of the panel and other Plasma components. Can I change that?

Yes, the ability to change the look of Plasma was planned since the beginning. Plasma can use "themes", which are essentially a number of SVG images and files specifying the colors, to change its appearance. A number of themes are already available on [kde-look.org](http://kde-look.org).

How can I change my Plasma theme?

Right click on your current desktop, select "Desktop Settings" (alternatively, you can select the same option from the desktop cashew) and you will find the option under "Desktop Theme". You can also download new themes directly from there by clicking the "New Theme" button, using Get Hot New Stuff (GHNS).

Step by step instructions, although made for KDE 4.1, (including screenshots) are [available on Aikurn's blog](#).

### Is there support for advanced visual effects (transparency, etc.) without using compositing?

In an effort to keep the codebase clean of workarounds (if not even hacks), the Plasma developers have decided that features that require compositing to work will not have a composite-less version. The main reasoning is that in the past (KDE 3.5.x), such approaches were one of the causes of the unmaintainability of the code, and also because supporting those features is actually pushing graphics card developers to write better graphics drivers.

## Troubleshooting

### Plasma crashed, how can I bring my desktop back?

Normally Plasma automatically restarts in the event of a crash. If this doesn't happen, open KRunner by pushing Alt-F2 (it should be still running) and type "plasma-desktop". Plasma will be restarted.

### My panel is gone, how do I get it back?

```
kquitapp plasma-desktop; rm
$KDEHOME/share/config/plasma-desktop-
appletsrc; plasma-desktop
```

This deletes your plasma settings, so you'll get the default configuration back. If running the 3 commands at once doesn't work, try typing them in manually and wait a few seconds before running the next command.

(Note that the \$KDEHOME environment variable may not be set. Try `~/kde` (Fedora, Kubuntu Intrepid, Debian, upstream default) or `~/kde4` (OpenSUSE, Kubuntu Hardy and several others).)

### Some GTK+ applications show wrong system tray icon sizes.

That is unfortunately a problem in the freedesktop.org system tray specification, which does not define the sizes for system tray icons properly.

### I experience extreme slowness when using Plasma with the NVIDIA binary driver.

This is NVIDIA's fault entirely, due to their driver not supporting correctly the XRender X11 extension, and it also affects other parts of KDE SC such as [Konsole](#). See [this blog entry](#) on how to report issues upstream to NVIDIA. [This page](#) contains a few suggestions on how to improve performance.

NVIDIA has released the 18x.xx series driver that can improve performance dramatically with the Plasma Desktop and KDE SC 4.x in general.

Users who have a NVIDIA 6 or 7 series card should add the following lines to their `xorg.conf` in the "Screen" section, which may improve performance.

You don't need to add these lines if you have a 8/9 or above series NVIDIA card, since they're enabled by default.

```
Option "PixmapCacheSize" "5000000"
Option "AllowSHMPixmaps" "0"
```

There are some other options you can try, which may improve things if you get poor Desktop Effects performance.

Go to SystemSettings»Desktop»Desktop Effects»Advanced, you will see "OpenGL Options", make sure "Bilinear" or "Nearest (fastest)" is set as the "Texture Filter" option. You can also try turning off "Use VSync" there as well.

### Folder View and other plasmoids look badly rendered with an ATI video card and the open source radeon driver.

To work around this issue, you have to change the 2D acceleration method from XAA (X Acceleration Architecture) to the newer EXA. As this involves editing your xorg.conf file, bear in mind that such a modification may damage your system. Do it at your own risk.

To make the switch, edit your xorg.conf file (make a backup just in case) and locate the Device section for your graphics card. Add the line

```
Option "AccelMethod" "EXA"
```

before the "EndSection" line. If there is already a line with AccelMethod, change it from XAA to EXA. Save

the file and restart the X server.

Notice that EXA is still marked as unstable, and that some other applications such as some KDE3 programs may render incorrectly.

## Hints & Tips

### Add an application launcher to the panel

If you use kickoff as your menu, right-click on the application icon, and select Add to Panel. If you use Lancelot simply drag the application onto the panel - you may need to hold it there for a second or so before letting go.

### Add a launch menu to the panel

[Lancelot](#) makes this possible. Click on the menu launcher, then drag Applications as described above. When the popup menu appears, select 'Lancelot part'.

Various parts of the [Lancelot](#) menu can be dragged to the panel in this way. Read [this description](#) of how to use it.

'Favorites' may be a good choice for adding to the panel

### Disabling ARGB visuals

For many of its effects, Plasma makes use of the so-called "ARGB visuals". For older video cards, this can mean a severe performance hit. To disable

ARGB visuals and increase performance, you need to set the `KDE_SKIP_ARGB_VISUALS` environment variable to 1 (`KDE_SKIP_ARGB_VISUALS=1`) before Plasma starts. You can do so by putting a line setting this variable in `/etc/profile` or in `~/.profile`. Right-click the panel when your task bar is full

To make some changes to the panel you need to right-click on it - and if you have open applications that may not be easy, The workaround for this problem is to use the panel cashew to bring up the panel settings, then you can right-click anywhere on the panel, including on application tabs, and the command will go to the panel, not the application.

### Re-arrange the application tabs on your task bar

Right-click on an empty part of the task bar (or use the method described above) and select Task Manager Settings. In the 'Sorting' combo-box, select 'Manual'. 'OK' to close it. Now you can re-arrange your task icons by holding down Alt and dragging the tabs to their new order. (If you use this alt-drag while the panel config panel is open the whole group of application tabs will move as one.)

### Watch some Screencasts

[This forum page](#) has links to screencasts that will help you understand Desktop Settings, Panel Settings and the Zooming User Interface (a.k.a. the Cashew).



### Miscellaneous tips

Some alternatives for those who like a sparse desktop:

- 1 - you can remove the panel entirely. Open applications would be available using the ALT+TAB cycling.
- 2 - Remove the panel and add a short one at the top of the screen, to hold only the task manager
- 3 - Create a panel containing the task manager and use autohide.

### HowTo

A page of [Screencasts](#) to help understand Plasma



*The NEW  
PCLinuxOS  
Magazine*

*Created with  
Scribus 1.3.5*

## Screenshot Showcase



Posted by ms\_meme, January 18, 2010, running KDE 3.5.10

# Computer Languages A to Z: Haskell

by Gary L. Ratliff Sr. (eronstuc)

In his address on the evening he received his Turing Award in 1977, John Backus praised the type of languages known as Functional Languages. This address was mentioned in my recent article on Fortran, and is officially known as: Can programming be liberated from the von Neumann style?: a functional style and its algebra of programs. Haskell is one example of such a language. He also created such a language himself, which was known as FP. Haskell is an Open Source language, and is available for many different platforms including: Unix, Mac, Windows, 64 bit Linux, 32 bit Linux, BSD, and Solaris.

There are many different versions of Haskell available, but the one we will be using in this article is GHC (The Glasgow Haskell Compiler.) This language, once installed, can be operated as a compiler or an interpreter.

To get a suitable version for the PCLINUXOS 2009-x versions we will go to the following web site: [http://haskell.org/ghc/download\\_ghc\\_6\\_10\\_4.html#binaries](http://haskell.org/ghc/download_ghc_6_10_4.html#binaries).

On the download section, you will find two different files for the i386 versions of Linux. At the moment, the most current version of this file is version 6.10.4. You will notice that one is 72 megs, and the other is 74 megs. The name of the file to select for download is: **ghc-6.10.4-i386-unknown-linux-n.tar.bz2** (72 MB). I have installed it on my copy of PCLinuxOS 2009.1, and my Gnome 2009.2, so I can verify that if you have either of these systems, this file will function properly. If you make an error and select

the larger file thinking that it would have more features, you will receive the same surprise I did when I tried to install that version on my Gnome system. The 74 meg version, when being configured, will report that it can not determine which directory it is in and will not create the Makefile needed to compile this for your system.

## Installing and Adjusting the GHC System

Installing the system is very easy. We do not need to be root to download and to configure the system. But, as the file we download expands when unarchived to an item requiring nearly 700 megs of space, we will want to delete it once it has been properly installed and is operational. So, log in as root once you have the file downloaded. However, for the entire install, as well as the correction of two matters, we will need to become, and stay, root for a while. (NOTE: it is not advisable to be logged onto the internet while running as root!)

```
su
<<enter password for root>>
# tar -jxvf ghc<<tab>>
# cd ghc<<tab>>
# ./configure
# make
# make install
```

OK, since Linux uses the GNU version of tar, this is a shortcut which allows the system to be unarchived and untarred with one command. If the product were a zipped file, then the command tar -zxvf would perform the required unarchiving. If you wish to perform the unarchiving as a separate step, then the

bunzip2 command would be used, followed by the tar command to extract the file.

The last item of information you will see when the make install finishes, is that the documentation for the product will be found in this location: "/usr/local/share/doc/ghc/index.html." This is true, so while still logged in as root, open this file in Firefox, using this command: # **firefox file:///usr/local/share/doc/ghc/index.html**.

Now a web page will be displayed. If you begin to click on the provided links, you will discover that they all function properly, except for two which will produce a file not found (browser error 404). These two links are the one for the users guide, and the one for Cabal. Notice that the link for the users guide is trying to take us to: /usr/local/share/doc/users\_guide/index.html. And, at present, there is not any directory in this structure for the users guide. Now we see why we remained root, as the creation of this directory would not be permitted as the normal user. Lets now make this directory:

```
# cd /usr/local/share/doc/ghc/
# mkdir users_guide
```

Now, if you are using several different screens, you would just click on the one which still has the Firefox browser open. Then, in the search box, search for ghc users guide. You should find an item mentioned as: The Glorious Glasgow Haskell Compilation System User's Guide. So download this item to your system. In the KDE version, it seems to be downloaded to the desktop, while in the Gnome

version it was found in a Downloads folder. However, it may be that is just how I had the feature set on these two systems. In any event, once it has been located, rename it to index.html. Once this is done the first item to correct will be completed by moving this file to the users\_guide area. Now we indeed do have:

```
/usr/local/share/doc/users_guide/index.html.
```

The next item we wish to correct is the Cabal item. Here again the current reference is wrong. There is an item, Cabal, under the libraries folder, and the Cabal folder does contain an item index.html. I tried two methods to fix this problem and neither worked. One was to create a symbolic link to the proper location of the file, and the other was to make a copy and send it to that location. That would not work either.

The method which works is to simply edit the html source file. You may have kwrite in the KDE version, gedit in the Gnome version, or you may well have emacs, if you installed this in trying the features of elisp. However, to save the edited file, you will still need to be the root user. The file you wish to edit is: /usr/local/share/doc/ghc/index.html. All you want to do is locate the cabal line, and insert "libraries/" in front of Cabal. Then save the file and exit. Next, you will want to delete the folders for ghc and the archived files from the location they were downloaded to.

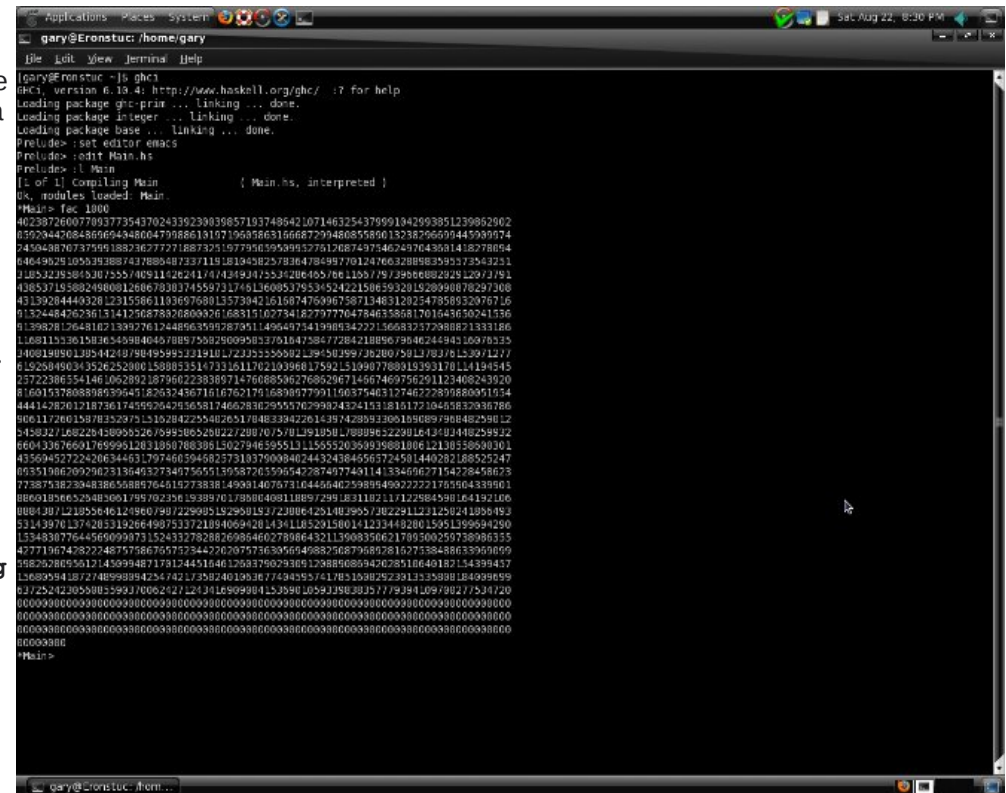
That fixes everything. So you can now return to being a normal user. You can begin learning Haskell and the most excellent starting place is the users' guide. Here I recommend that you have the users guide open in one screen area, and an active

Haskell session in another. To start your Haskell session, enter the following command into a terminal:

```
$ ghci (to which
the system will
respond with:)
GHCi, version
6.10.4:
http://www.haskell.
org/ghc/ :? for
help
Loading package
ghc-prim ...
linking ... done.
Loading package
integer ... linking
... done.
Loading package
base ... linking
... done.
Prelude>
```

You will soon discover that having an interpreted language which will also compile, is a very useful feature. Once you read some of the user's guide, you will begin to appreciate many of the features of this system. For starters, the system will allow you to set an editor to perform the edits of the programs you wish to compile. The system will also allow you to enter a shell program by executing `!<<cmd>>`

However, do not try to use the `su` command to become root, as the system will get the first letter



```
Applications Places System
gary@Eronstuc: /home/gary
File Edit View Terminal Help
gary@Eronstuc ~$ ghci
ghci, version 6.10.4: http://www.haskell.org/ghc/ :? for help
Loading package ghc-prim ... linking ... done.
Loading package integer ... linking ... done.
Loading package base ... linking ... done.
Prelude> :set editor emacs
Prelude> edit Main.hs
Prelude> :! Main
[1 of 1] Compiling Main             ( Main.hs, interpreted )
OK, modules loaded: Main.
*Main> fac 1000
40238726007700377354370243362300368571937486421071463254379991042993851239862902
05928447083866045486047978808191071968586318668779486053580013238296097445930974
2404887073759918823627721887325187793659599327612687497540649763601418278064
64649629105539388743788048173717191819458257836478699770124766328898355373543231
1285323938453075557409114262417474349475534206465786115077973986809292512097391
43853715888249608126867838374559731746136005379534524221586593201528998878297308
4513928444032812315861103697680135730421610874769967587134631282547858932076716
91324849293813141258783268089761083151073418277778748483881701543630941836
9139828126481021389276124488635992878511496487541980534222136683257298871533186
11681153361583645984046788975829009583761847586728421889679046249410970535
240819890139544249784959923191012723255568021394502997362807581378370153971277
6192804903435262528001588853314731611762103968175921510987788919393178114194545
2572238855414610628921879602238387147868856027685206714667469756291123408243920
81691837888893994182632458716187602179188980779911903794031274622289388095154
44414282012187361745956242836581746628362955576299824324151318161721045828286786
90611726015878329751516284225402651784833842261439742898330019808978848298612
243832716822548895526709958652802272807075701391858178888652298164381248258922
6604387660176999812813987883881502794639551311555520368938810612138538690301
43599452722428344631397468384682379137998402443248646672450144028218825247
0051986399296231364632734675655139587655965427874077411433460677154278458625
773875382394838658887646182738381499014076731644664025989949022221765564339901
886018566525483001795702326193897017880814889729183118217122864598164192106
888487121858461249607807228995152950153223886425148395577822911231258241858493
5313970137283319264907533721094069428143411852015801412334492001505159994290
15348307645969997315243278986869646027886492115983506217895062973898635
427719874282248757586765723442262075736386649882568796878162735848833969699
98252869561214509948717814451646126837902938612088808694267851664018213439447
156895941827489989425474213382401983677494355741785158822931333888184098699
63725242305588559970062927124341869898415398610587388385779394109798277534720
000980009800098000980009800098000980009800098000980009800098000980009800098000
000980009800098000980009800098000980009800098000980009800098000980009800098000
000980009800098000980009800098000980009800098000980009800098000980009800098000
00098000
*Main>
```

and skip to a new line so that you can never get the password correct. As I had not yet installed Emacs on the Gnome version, that was one of the first things I tried. Also a simple `apt-get` install for Emacs will not do, as this only installs the library files needed by Emacs. Synaptic should be used to select the version for X11, and perhaps also the elisp sources. However, once you have Emacs installed, you can edit and install your first Haskell program. The easiest method is to just copy this from the section of the users guide on compiling



source. The file is named Main.hs. Here is a shot of this process. The example Main.hs file gives you a simple factorial function. Notice that the math is not limited. The amount of precision is almost infinite. Also, when doing division, you will obtain an exact answer, even if it does seem obvious. For example  $99/3$  would yield

33. While  $100/3$  yields the answer  $100/3$ . Also, note that once a program has been compiled, the prompt has been changed from Prelude» to Main\*» If you look at the items before the Prelude» prompt, you will see that it loaded several packages for you. If, for example, you enter pi, you will find that it is defined for you to 15 decimal places.

One normally develops programs by trying out expressions in the interpreter. A really fun item is the reverse function. This takes a string and shows it in reverse order. For example the reverse of Gary is yraG. Now this is not limited to just a simple word, as the next screen shot will reveal. Just be certain to surround the string with double quotes. Here we see some of the immortal words of Abraham Lincoln altered by this Haskell function:

```

gary@Eronstuc: /home/gary
File Edit View Terminal Help
[gary@Eronstuc ~]$ ghci
GHCi, version 6.10.4: http://www.haskell.org/ghc/  :? for help
Loading package ghc-prim ... linking ... done.
Loading package integer ... linking ... done.
Loading package base ... linking ... done.
Prelude> pi
3.141592653589793
Prelude> reverse "Fourscore and seven years ago our fathers founded on this continent a neww nation dedicated to the proposition that all men are created equal."
".lauqe detaerc era nem lla taht noitisoporp eht ot detacided noitan wnen a tnen itnoc siht no dednuof srehtaf ruo oga sraey neves dna erocsruoF"
Prelude>

```

The operation of the compiler has a similar set of flags as the familiar gcc set of compilers. The file may be compiled into an assembler listing. Or, it may be compiled into an object file for perhaps later making into a library of Haskell functions. If you have it compiled from within interactive mode, as we just did with the Main.hs program, its functions will be added to those offered by the interpreter, and be ready to start using. So we have installed the system and corrected its few faults with the documentation setup, and given some examples of its use. Now go exploring with this new language and enjoy.

Before leaving we will mention what Cabal is. There are rpm files in the Red hat system, which is what PCLinuxOS uses. Another popular system is deb files in the systems derived from Debian. This allows installing new software. In a similar manner, Cabal is a repository of Haskell packages which may be installed to the Haskell system.



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PCLinuxOS.**

# Game Zone: Machinarium

by Paul Arnote (parnote)

In the gaming world, there are shoot-'em-up games. There are role playing games. There are arcade-type games. There are strategy games. There are card games. There are adventure games. And then there are puzzle games. This month's game, Machinarium, falls into that latter two groups of games, as an adventure game where you have to solve puzzles to advance to the next level.

Machinarium is created by [Amanita Design](#), an independent Czech game development studio that was founded in 2003. Amanita Design has previously created the award-winning Samorost in 2003, and Samorost2, in 2007.

From the [Machinarium web site](#), the game is described as a point-and-click adventure game. Machinarium is a flash-based game, and there is a playable demo online (just go to the Machinarium web site ... you can't miss it), where you can play the

first three levels of the game right in your flash-capable browser.

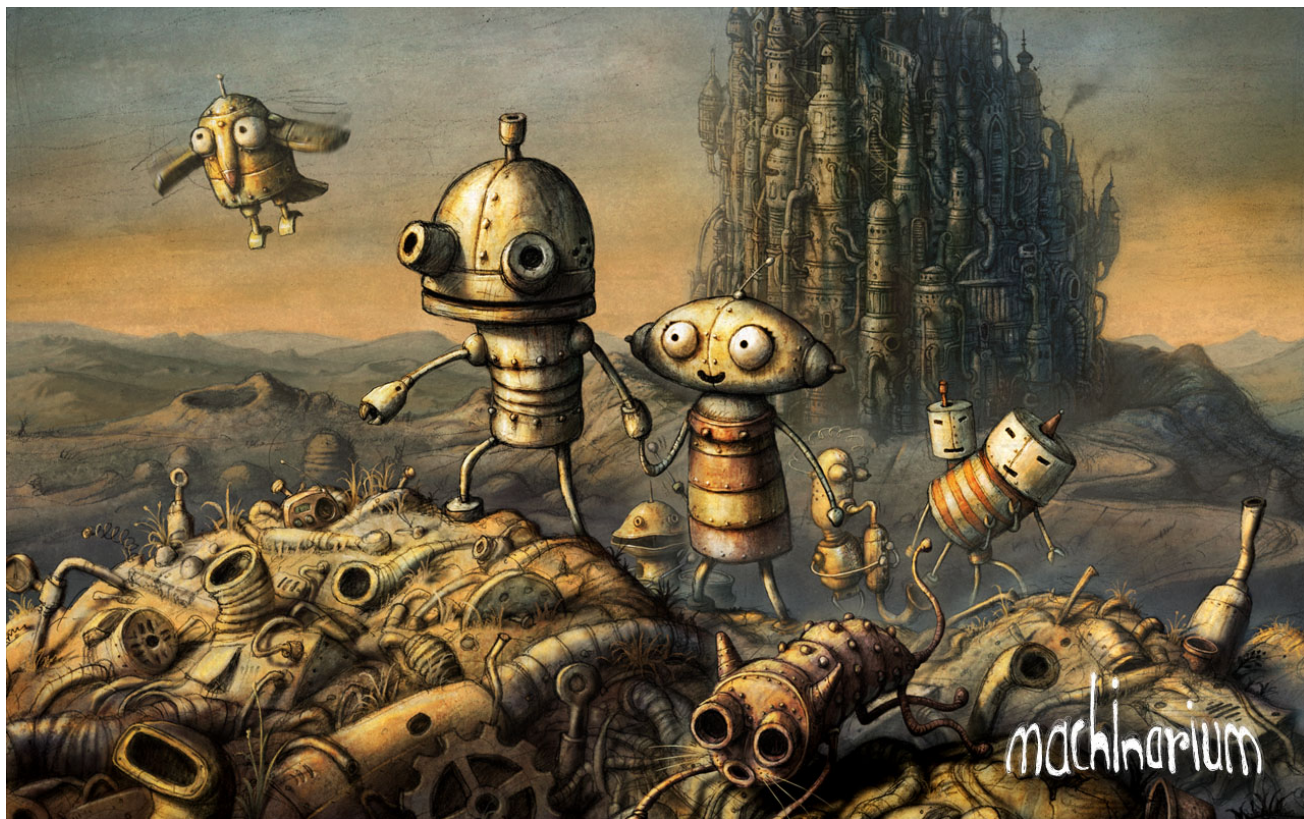
The premise of the game is fairly simple. You control a cute little robot, who has been mistakenly kicked out of a mechanical city. He must find his way back, rescue his girlfriend robot, and along the way, prevent a gang of hoodlum robots from setting off a bomb. To progress through the 30 levels on his way home, he must solve brain teaser puzzles. One puzzle tends to lead into another, yet each one is neatly separated from each other.

The game is provided in versions for Linux, Windows XP/Vista/7, and Mac OS X (10.4 and higher). The full version of the game features 30 levels of brain challenging puzzles to solve. It is available for purchase for \$20 (U.S.), and includes copies for all three platforms, as well as a copy of the game's "soundtrack," providing you with the music from the game for you listening pleasure. Everything in the purchase comes DRM-free.

Since the game is entirely flash-based, installing the full version is very easy, and makes no changes, nor adds or alters any libraries, to your PCLinuxOS installation. Simply untar the game to its own directory, making sure that you preserve the directory structure.

## Game Play

Using your mouse, you guide your robot through the various levels, solving puzzles along the way. Sometimes you will find things that you will have to read. Other times, you will have to find the materials





to trick your way through the level. And yet other times, you will have to find a way to use the equipment provided to help you advance through the level.

Most everything you come across has the potential to be useful – always in the current level. As you come across items, you can take, and collect, them for later use. You can also combine collected items to make new tools, which are necessary to successfully complete the level. To make your new tools, simply click on one item and drop it onto another item in your inventory bar. Your inventory "stash" will be cleared as you complete each level.

To use your collected items, you simply move your mouse cursor to the top of the screen, and drag the item you want to use to the place where you want to drop it in the level. To put your item back (say, you've picked up an item, but cannot find a current use for it), reverse the process and drag the item with your mouse to the top of the game play screen, and deposit it in the inventory bar that appears.

Sometimes, you will have to locate "hidden" controls, and perhaps even re-wire those controls, to be able to get the machinery in the current level to operate in such a manner that it helps you complete that level.

## System Requirements

The system requirements to play Machinarium are:

- 1.6 GHz (or greater) processor
- 1 GB memory
- 380 MB Hard Drive space

- 1024 x 768 minimum screen resolution (1280 x 800 or higher recommended)
- 128 MB video RAM

I can attest that I personally played the game successfully on hardware with lesser specs. For example, I have played the game on an IBM Thinkpad T23, Pentium 3, 512 MB RAM, and 8 MB S3 video, running PCLinuxOS Phoenix 2009.4. While the game was virtually unplayable when it was

set for play in a full screen, changing to playing the game in a window made it run at a speed that made game play possible, and even fun.

## Hints & Tips

Game play is really quite simple, and you will catch on very quickly as to what you need to do to get through the levels – although I'm not saying that game play isn't without its challenges. Each level will present you with another brain teaser puzzle to





solve before you are allowed to proceed to the next level. It does make you think.

If you get stuck, there are two built-in ways to help you along your way. First, at the far right of your inventory bar, you will see two items: a lightbulb and a walk-through book. The lightbulb provides a hint at what you need to accomplish in that current level. It's a rudimentary and crude drawing, but usually is enough to give you a valuable clue as to how to complete that level. The other, the walk-through book, provides more information on how to get through the level. To access the walk-through book, you must first guide the key through a spider-infested maze and into the keyhole to unlock the single, sepia and ink drawn cartoon panels that detail what must be done.

Additionally, a simple Google search will reveal all sorts of hints, tips, guides, and walk-throughs for Machinarium. Simply use the game name as your search criteria.

Pick up everything you can. Even the most seemingly inconsequential item will be useful. If the game allows you to take an item, then do so. There IS a reason, and it will be used somewhere in that level that you are on. Remember, your inventory will be purged as you complete each level.

From time to time, you will find passage ways back to areas that you have previously traveled through. There is usually a reason, such as additional items (that weren't available on your first trip through that area) that are needed to help you get through the current level. Explore everything, and every passage

that is opened up to you throughout your game travel.

There is a problem getting the game to run on PCLinuxOS with the provided game launcher. For whatever reason, the provided launcher will hang on loading in the first introductory flash file. Fortunately, there is an easy way to work around this problem. First, install the Windows version on a Windows machine, or partition, or in a Windows virtual machine. Copy the 45 KB "machinarium.swf" file in the Windows installation directory to a USB flash drive, and copy that file into the main directory that you installed Machinarium to in your PCLinuxOS installation. Then, you can launch that file in your favorite flash-enabled browser, and play the game there. In Firefox, you can press F11 to switch to a full screen, enabling you to play the game full screen (if your hardware capabilities allow it). Otherwise, just play it in the browser window without making the switch to full screen.

### Conclusion

Machinarium is a fun – albeit challenging – game. And this is coming from someone who is definitely NOT a gamer. The full version is definitely worth the \$20 price tag it carries. The artwork is outstanding, and if you are like me, you will likely spend a good portion of your gameplay just admiring the scenery of the game. For me, the artwork reminds me of the illustrations from some of the higher-end children's literature books, like those from Maurice Sendak. But be careful, since Machinarium can become quite addictive – even for a non-gamer like me.

## International Community PCLinuxOS Sites



# ms\_meme's Nook: PCLOS a Smoocho



MP3

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## **PCL PCLOS a Smoocho**

The rapture I feel says that you'll always be mine



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## **PCL PCLOS a Smoocho**

Your every device shivers me through and through

System tools oh what joy so easy to deploy

Never knew this thrill before

Engaging super user mode ecstasy of the code

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Your each little folder and file I will pursue

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I'll use you forever and make Texstar's dream come true



OGG

# Screenshot Showcase

Posted by Archie, January 25, 2010, running KDE 4

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# Command Line Interface Intro: Part 5

by Peter Kelly (critter)

## The Linux File System

The Linux file system is built like an upside down tree starting with the root directory `/`. Don't confuse this with the user name root. This is the root of the file system. From this root, grow branches, and from there grow other branches – ad infinitum. The first level of branches is mostly standard, although other distributions may add special directories, and you may also add some yourself. Where a file or directory is located within the file system is known as the path. The path of these first level directories is always `{directory name}` e.g. `/home`. As you make your way through the file system, every time you reach a new branch, like a fork in the road, you add another `/` so that you would refer to a particular file as

`/home/jane/mydir/myfile1`.

This file is three levels deep, and this way of referring to it is known as the absolute path. When jane is in her home directory `/home/jane`, she would refer to the same file as `mydir/myfile1`. This is known as the relative path, relative to where you are in the file system.

The standard PCLinuxOS file system looks like this:

```
|/      The root of the file system
|bin    Commands for use by the users
|boot   Files used by the boot loader (grub)
|dev    Hardware is treated as files and here is
        where you can access them
```

```
|etc    Miscellaneous scripts and system
        configuration files
|home   Users home directories are in here
|       |jane  Janes home directory
|       |john  Johns home directory
|initrd A special directory used by PCLinuxOS at
        boot time
|lib    Common libraries of routines used by
        various applications
|media  Where the system mounts external media
        (e.g. thumb drives)
|mnt    Other files systems are often mounted here
|opt    Additional 3rd party application software
|proc   memory resident file system that tracks the
        system state
|root   The super user's home folder
|sbin   System administration and privileged
        commands
|sys    A virtual file system akin to /proc storing
        dynamic kernel data
|tmp    Temporary system-wide storage area
|usr    Other installed applications, documentation
        and shared resources such as icons
|var    Various log files, mail and print spoolers etc.
```

Any distribution that you encounter will not deviate too much from this, although there may be some small changes

All of this takes no account of which hard drive or storage device any of these files are actually on. That depends upon where on the tree the file system that is resident on the device is mounted. Note that `/proc` & `/sys` do not exist on any hard drive. They are memory resident only. Try `du -sh /sys` to display the disk usage of the `/sys` directory.

## Mounting and unmounting file systems

When you boot the system, the device nominated as the root of the file system is given the path `/`. The installation process will have created the necessary folders at the first level, as shown above. If you elected to have a separate `/home` partition, then the `/home` directory will point to that partition. The partition is then said to be mounted at `/home`. You may add or remove additional devices as you see fit to anywhere on the file system. To mount a device on the file system, you need to provide certain information:

- The type of file system used by the device
- The mount point – where on the file system the device is to be mounted
- The device name or id
- Any options that control how the device is accessed and mounted

The type of the file system could be one of very many recognized by the system but the ones that you are most likely to encounter are

- **ext2** The second extended file system also known as the linux native file system. There was a first, `ext`, but it is no longer supported and shouldn't be used.
- **ext3** This is `ext2` with the addition of a journal. I'll explain journals in a moment.
- **ext4** The next stage in the development of the `ext` file system. This is still in the testing stage but usable if you want to experiment.

It should not however be used in 'mission critical' situations such as servers or for the boot partition of a system until your distribution approves it.

- **reiserfs** A popular journaling Linux file system
- **iso9660** Used on CDROM and DVD disks
- **vfat** Used to access Microsoft fat file systems.
- **ntfs-3g** The open source driver to access ntfs file systems used by Microsoft Windows.
- **nfs** Networking file system, not to be confused with ntfs.
- **swap** The linux swap file system type

The device name may be given in various ways,

**/dev/xxx** This is the traditional way

**LABEL={the partition label}** This can be used to simplify recognizing what is on a particular partition.

**UUID={Universally Unique Identifier}** This is the system that is currently used by PCLinuxOS in **/etc/fstab**

While UUID may be confusing to look at, it has advantages in multiple partitioned systems. If you are happy to let the system look after things, then this is best left alone. If you want to take control, then either of the other two methods might be a better bet.

The default options are usually ok but in certain cases you may need to specify others, the most usual ones being:

- **auto** or **noauto** to mount or not when the command **mount -a** (all) is issued or when the

system is booting.

- **user** to allow an ordinary user to mount the file system, only that user or root may unmount the file system.
- **users** allow all users to mount or unmount the file system
- **ro** or **rw** to mount the file system read only (e.g. a cdrom) or read write.

To use the mount command to manually mount devices, you usually need root permissions, and you would issue commands like these:

**mount -t auto /dev/cdrom /media/cdrom -o ro**

**-t** specifies the file system type, here we are requesting that the system recognizes the file system type automatically. If this option is omitted then the mount command will attempt to guess the file system type.

**-o** is the start of a list of options, separated by commas, that control the method of mounting the device.

**ro** read only is the only option used in this example.

**mount -t ntfs-3g /dev/sda1 /mnt/windows** to mount an ntfs formatted windows partition

```
[root@daisy jane]# fdisk -l
Disk /dev/hda: 8589 MB, 8589934592 bytes
16 heads, 63 sectors/track, 16644 cylinders
Units = cylinders of 1008 * 512 = 516096 bytes
Disk identifier: 0x00000000

   Device Boot      Start         End      Blocks   Id  System
/dev/hda1 *          1           8591     4329832+   83  Linux
/dev/hda2            8592        16644     4058712    5  Extended
/dev/hda5            8592         9649     533200+    82  Linux swap / Solaris
/dev/hda6            9650        16644     3525448+   83  Linux

Disk /dev/hdb: 8589 MB, 8589934592 bytes
16 heads, 63 sectors/track, 16644 cylinders
Units = cylinders of 1008 * 512 = 516096 bytes
Disk identifier: 0x00000000

   Device Boot      Start         End      Blocks   Id  System
/dev/hdb1 *          1        16644     8388544+   83  Linux
```

Results of **fdisk -l** command.

To discover which file system devices are attached to your system use the command **fdisk -l**.

To then find the label, uuid and file system type of a device you wish to mount issue the command **blkid {device name from fdisk -l command}**

```
[root@daisy jane]# blkid /dev/hdb1
/dev/hdb1: UUID="f8413aeb-25d1-41bd-8c7e-61eaad5d6e1a" SEC_TYPE="ext2" TYPE="ext3" LABEL="data"
```

If you need to use labels or uuid, then use **-L {label}** or **-U {uuid}**

```
[root@daisy jane]# mount -t ext3 -L data /data
[root@daisy jane]# df
Filesystem      Size  Used Avail Use% Mounted on
/dev/hda1       4.1G  2.4G  1.6G  61% /
/dev/hda6       3.4G   82M  3.3G   3% /home
data            451G  171G  281G  38% /mnt/host
/dev/hdb1       7.9G  1.6G  6.0G  21% /data
```

To create a label for an ext2, ext3 or ext4 file system use the command **tune2fs -L {label}**

**mount** on its own gives a list of all mounted file systems and their types, Adding **-l** will also show the labels. This information is actually the contents of the file **/etc/mtab**, which is one of the places the system keeps a list of mounted file systems. The other is **/proc/mounts**. Try **cat /proc/mounts**.

**mount -a** mounts all devices listed in **/etc/fstab**, except those with the option **noauto**

If a device is listed in **/etc/fstab**, then the mount command will take information from there and require you to supply only the device name or the mount point.

To remove a device from the file system, the command is **umount**. Notice the missing **n**.

**umount /dev/cdrom**

**umount -a** unmounts all file systems. A file system cannot be unmounted if a file or directory in it is being accessed. The root file system **/** of a running file system cannot be unmounted

Why bother with unmounting a file system? Well, this is all to do with keeping things in sync. Linux is a multi-user, multi-tasking system, and as such, has to use system resources like memory and processor time wisely. Unless instructed to the contrary, data is written to file systems asynchronously, i.e. not when the command is issued, but when the system deems it prudent to do so. Even if you are the only user on the system, you may have several applications that

periodically write to a file, like perhaps an autosave feature or a scheduled event like a backgrounded backup task. All of the data cannot be written at the same time, and so it is sidelined until it can be. Removing a floppy disk without first unmounting it, for example, might cause data loss and will confuse the device management system. The **umount** command synchronizes the file system before releasing it.

Journalled file systems were introduced to go some way towards protecting file systems against corruption when asynchronous data writing is used and the system suffers a catastrophic event, such as a power failure. Writing data is a multi-part operation, known as a transaction which involves the data, inodes, the directory entries and other metadata. If any part of this transaction is not completed when the system is brought down, then file system corruption occurs. On a large file system, it can take a while to rectify, walking through inode by inode, block by block. In a journalled file system, when a transaction is authorized, the processes involved in the transaction are recorded in a central area before any data writing is committed. If the transaction is incomplete when the crash occurs, then on reboot the journal is replayed, and the transaction is then completed. This makes recovery much quicker. An ext2 file system can be converted to ext3 without data loss by using the command **tune2fs -j /dev/xxxx**.

For a device like a CD drive, once the drive is unmounted, you can get the disk out with the following command:

**eject -T** (-T toggles the state of the drive tray

between open and closed, repeat the command to close the tray)

You could, of course, just push the eject button on the device. But if the PC is under the desk, you may find it useful to put a shortcut on your desktop to this command. **eject** should automatically unmount the volume if you have not already unmounted the volume. If you have an external floppy drive or an iPod (such as a second generation Nano), you must issue the **eject** command before disconnecting the device, or removing the floppy from the external drive. **eject** ensures that any data left in the buffers is flushed to the device, preventing corruption of the data on the diskette or device.

For those devices that need to be mounted at boot time, or are required to be regularly mounted or unmounted, the system keeps a look up table that provides this information. It is found in the **/etc** directory and is called **fstab**.

```
jane@daisy > ~ $ cat /etc/fstab
/dev/hda1 / ext3 defaults 1 1
/dev/hda6 /home ext3 defaults 1 2
none /proc proc defaults 0 0
/dev/hda5 swap swap defaults 0 0
none /dev/pts devpts mode=0620 0 0
```

The above is a fairly standard **fstab**. Look at the first line. It tells the system that when mounting **/dev/hda1**, it should be mounted to **/**, it uses the ext3 file system and the default options should be used to mount it. The last two numbers aren't relative to mounting partitions, but for completeness. The first of the two numbers is known as the dump number. Dump is a back up program, and checks



this number to decide whether or not to include this file system in a backup. Zero means no. The second of the two numbers is used to decide the order in which file systems should be checked using the fsck utilities. It is usual for the root file system to have a value of 1 here, and other file systems that are to be checked to have a value of 2. If a file system is to be skipped in a 'full' file system check, then it must have a value of 0 here.

## Working with partitions and file systems

One thing that causes a lot of people problems is the management of partitions. Not that there is anything inherently wrong with partitions, or that they are difficult to understand. Just sometimes they, or the configuration files used to access them, get screwed up.

A hard drive can be divided up into smaller chunks to separate data, or to house different operating systems. Initially, when the partitioning system was proposed and hard drives were small (just a few Megabytes. My first hdd was 40 MB Wow! All that space.), four partitions were deemed sufficient, but as hard drive sizes increased, a work around was found to allow more than four partitions. The original partitions were designated primary partitions, and if one of those was sacrificed and created as an extended partition, then this could be used as a container to house logical partitions. There can be only one extended partition in the partition table.

Linux has a lot of utilities for dealing with partitions,

from small cli-only utilities, to full blown graphical applications. PCLinuxOS Control Center uses the excellent diskdrake to provide a 'radically simple' graphical utility suitable for even the newest to Linux. We are going to use a cli-only utility called fdisk.

There several reasons to use fdisk. Messing about with partitions can be very dangerous, and it is all too easy in a graphical environment to get 'click happy' and wipe out a full system (although if a new file system hasn't been written to the device, it is still possible to recover). In a console, things tend to be more focused on the task at hand. A small utility like fdisk has fewer commands, and here simple is good. You will always find fdisk or something similar on any distribution.

We've already used **fdisk -l** to get a list of devices but if we now type

### fdisk {device}

Here, device is the device name without a partition number, as **fdisk** works with entire devices. So use **/dev/hda**, not **/dev/hda1**.

```
[root@daisy host]# fdisk /dev/hda
The number of cylinders for this disk is set to 16644.
There is nothing wrong with that, but this is larger than 1024,
and could in certain setups cause problems with:
 1) software that runs at boot time (e.g., old versions of LILO)
 2) booting and partitioning software from other OSs
   (e.g., DOS FDISK, OS/2 FDISK)
Command (m for help):
```

Typing **m (enter)** at any time will give us a list of available commands.

```
Command (m for help): m
Command action
 a toggle a bootable flag
 b edit bsd disklabel
 c toggle the dos compatibility flag
 d delete a partition
 l list known partition types
 m print this menu
 n add a new partition
 o create a new empty DOS partition table
 p print the partition table
 q quit without saving changes
 s create a new empty Sun disklabel
 t change a partition's system id
 u change display/entry units
 v verify the partition table
 w write table to disk and exit
 x extra functionality (experts only)

Command (m for help):
```

There are only sixteen commands available, including 'm' for the list of commands.

Linux uses DOS partition tables, so it is unlikely that you will ever need the 'b' and 's' commands, and for now I think that option 'x' should be avoided. That leaves us twelve commands with which we can destroy our system, but only one command will do that: the 'w' command. Until that command is issued, none of the changes that you have made are permanent. The 'q' command is our 'get out of jail free card.' Whenever we issue the 'q' command, we are returned to the system without committing any changes. Instantly and without fuss.

As for the remaining commands.

- **a** Some versions of the MSDOS/Windows boot loader would only expect to see one, and only

one, primary partition marked as boot-able, usually the first partition on the disk. Linux boot loaders grub and lilo just ignore this if set. If you are dual booting Windows and Linux, it does no harm to leave this as is.

- **c** Normally this flag is not set under Linux and if set can cause problems with overlapping partitions – best left alone.
- **d** Delete a partition
- **l** Print a list of all partition types known by fdisk
- **n** Create a new partition
- **o** Create a new partition table replacing the existing one – this removes all partitions on the device. Use with care.
- **p** Print the partition table to screen
- **t** Change the partition system id – this hexadecimal code tells the system what kind of file system to expect on the partition, e.g. 83 for ext2/ext3 file system
- **u** Switches the display units between cylinders and sectors
- **v** Verify the integrity of the partition table

You can experiment with these few commands until you feel comfortable, just don't use the 'w' command unless you mean it. 'q' will get you out.

```
Command (m for help): p
Disk /dev/hda: 8589 MB, 8589934592 bytes
16 heads, 63 sectors/track, 16644 cylinders
Units = cylinders of 1088 * 512 = 516096 bytes
Disk identifier: 0x00000000

   Device Boot      Start         End      Blocks   Id  System
/dev/hda1 *          1         8591    4329832+   83  Linux
/dev/hda2            8592        16644    4058712    5  Extended
/dev/hda5            8592         9649     533200+   82  Linux swap / Solaris
/dev/hda6            9650        16644    3525448+   83  Linux
```

If you look at the output of the 'p' command in the screen-shot, we can get a picture of the layout of the entire device – IDE hard drive no 1 in this case.

(NOTE: IDE is now called PATA (for Parallel ATA) to distinguish it from SATA, or Serial ATA. PATA and IDE are interchangeable terms when referring to the technology.) The drive is organized into a total of 16644 cylinders, and so all of the partitions must be created on cylinders 1 to 16644. If this is not the case, then you have a problem. Partition numbers 1 to 4 are reserved for primary partitions, whether or not they exist. Logical partitions are numbered from 5 upwards.

Partition 1 occupies cylinders 1 to 8591 and is a primary partition.

Partition 2 is also a primary partition created as an extended partition and occupies the rest of the disk so there can be no more primary partitions. This partition runs from cylinder 8592, the next available cylinder, to cylinder 16644 which is the end of the disk.

Partition 5 also starts on cylinder 8592 running up to cylinder 9649. This is the first logical partition.

Partition 6 occupies the remaining cylinders and is the second logical partition.

This all works very nicely, using all of the available space on the disk. Er! well no, not really. Let's

```
Command (m for help): u
Changing display/entry units to sectors
Command (m for help): p
Disk /dev/hda: 8589 MB, 8589934592 bytes
16 heads, 63 sectors/track, 16644 cylinders, total 16777216 sectors
Units = sectors of 1 * 512 = 512 bytes
Disk identifier: 0x00000000

   Device Boot      Start         End      Blocks   Id  System
/dev/hda1 *          3         8659727    4329832+   83  Linux
/dev/hda2            8659728    16777151    4058712    5  Extended
/dev/hda5            8659791     9726191     533200+   82  Linux swap / Solaris
/dev/hda6            9726255    16777151    3525448+   83  Linux
```

change the display units from cylinders to sectors with the 'u' command.

Then, we can see some ragged edges between starting and ending numbers. This is perfectly alright. Partitions must start on a cylinder boundary with the exception of partition 1.

Resizing partitions is a risky business. A partition is a container for a file system, so you could use fdisk to delete the partition from the partition table and then create a new partition. You would then need to resize the file system using a tool like **resize2fs**. Or, you could use a tool like gparted or diskdrake to do the job for you. In any event, it is a dangerous process, and not one one that I would be prepared to undertake without having a trusted, recent backup of all the data on that partition. If such a backup is available, then a better strategy would be to delete the partition, create a new partition, create a new file system on the new partition, and re-populate the partition from the backup. (NOTE: this latter method is also, typically, faster.)

Before a partition can be mounted it must contain a valid file system.

```
Device Boot      Start         End      Blocks   Id  System
/dev/hdb1 *          1         12190    6143728+   83  Linux
/dev/hdb2            12191        16644    2244816    5  Extended
/dev/hdb5            12191        16644    2244784+   83  Linux
[root@daisy host]# mount /dev/hdb5 /mnt/hdb5 -t ext3
mount: wrong fs type, bad option, bad superblock on /dev/hdb5,
missing codepage or helper program, or other error
In some cases useful info is found in syslog - try
dmesg | tail or so
```

The partition has been created with an id of 83, which tells the system to expect a file system of type 'Linux Native,' so we need to create one. The command for this is **mkfs**, and initializes or formats

the file system, laying out stuff like the directory tables and inode tables and setting up block sizes etc. Unlike partition table creation, this process overwrites existing data.

If you type **mkfs** into a terminal and then press tab you will see that there are many variations of the command. You can use the one that fits the file system type you want to create, or you can use the **mkfs** command with the **-t** option and supply a file system type.

**WARNING! Just make sure that the target partition is correct, as you will get no warning and all data on the partition will be overwritten!**

```
[root@daisy host]# mkfs.ext3 /dev/hdb5
mke2fs 1.41.6 (30-May-2009)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
140544 inodes, 561196 blocks
28059 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=578813952
18 block groups
32768 blocks per group, 32768 fragments per group
7808 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912

Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done

This filesystem will be automatically checked every 38 mounts or
180 days, whichever comes first. Use tune2fs -c or -i to override.
```

Of course, there are a multitude of options that you can pass to the command to control exactly how the

file system is created, but in matters as fundamental as file systems, I prefer to accept the defaults. You can see from the output that automatic file system checking will take place at predetermined intervals, but if you want to do it yourself, then the drive should be unmounted. To check the root file system, it is easiest to reboot from a Live CD, and check the file system while running from the Live CD.

To check a file system, use the command **fsck**. Each file system has its own specific checking utility, and **fsck** is a 'front end' for these utilities. If the file system type is known, then it can be specified with the **-t** option, or **fsck** will look in **/etc/fstab** for it. Of course if you know the name of the correct utility you can use that directly.

**fsck -t ext3 /dev/hdb5** or  
**fsck.ext3 /dev/hdb5**

Whether or not a disk is to be automatically checked is determined by the value in the sixth column of **/etc/fstab**. The frequency of checking ext file systems is determined when the file system is initialized, but this can be overridden with the utility **tune2fs -c** to change the total number of mounts.

Use **tune2fs -i** to change the interval in days. Add **w** or **m** to the number for weeks or months.

```
[root@daisy host]# fsck.ext3 /dev/hdb5
e2fsck 1.41.6 (30-May-2009)
/dev/hdb5: clean, 11/140544 files, 26061/561196 blocks
```

## Swap space

This is a file system that always provokes a lot of discussion. It has its own set of tools, and is used by the system, not the users. One question that always crops up is "How much should I have?" The answer is always the same: "That depends."

Swap space was introduced in the days when memory was very expensive, and therefore very limited. When system load was high, it was possible to run extremely low on memory, which meant that the kernel had a busy time trying to juggle things around just keep the system running. This resulted in a slow and unresponsive system. With swap space, the system administrator could give the system some storage space to use as temporary memory. Because the data in memory had to be 'swapped' in and out of memory to the much slower hard drive space, it was always only a temporary solution, and if swap space was being frequently used, it was a sure sign that the installed memory was insufficient for the demands placed on the system.

Today, things have changed and modern systems have large amounts of memory. The rule of thumb used to be to have twice as much swap space as RAM. If you are limited to a small amount of memory, say 256MB, then 512MB of swap would be reasonable. If however your machine is fitted with 2GB or more, then twice that would be rather ridiculous, and could even slow down the machine. If



you do a lot of memory intensive tasks, like video editing, then you may benefit from more swap space. If you use a laptop that utilizes hibernation, then you will need a little more swap than RAM, as all the contents of RAM are copied to swap space when hibernation is entered, and copied back to RAM on resume. The thing to do is to monitor memory usage, either with a graphical system monitor, or with the command `free`. You can always add more.

Swap space can be in the form of a partition or a file. Partitions are the preferred method, as they tend to be somewhat faster, but a swap file can be a great temporary measure if the system suddenly finds itself low on ram and swap. To create a swap partition, you can use `fdisk` and create a partition of type id 82 (Linux swap).

To create a swap file is slightly more involved. You will need to create a file of the desired size, and then write data to it. To create a swap file of 128Mb (131072 blocks of 1024 bytes) called `myswap` in the root directory, and to fill it with null characters, use the command `dd if=/dev/zero of=/myswap bs=1024 count=131072`.

It is advisable at this stage to make sure that the system has actually written all the data to the file. The command to do this is simply `sync`.

This file then needs to be formatted/initialized to the swap file system.

**`mkswap /myswap 131072`**

Now, the file permissions need to be changed so that only the system has read/write access.

**`chmod 0600 /myswap`**

The file is now ready to be used, and can be added or removed with the commands `swapon /myswap` and `swapoff /myswap`

Do not delete the file without first removing it from swapspace with the `swapoff` command.

```
[root@daisy host]# dd if=/dev/zero of=/myswap bs=1024 count=131072
131072+0 records in
131072+0 records out
134217728 bytes (134 MB) copied, 3.68923 seconds, 36.4 MB/s
[root@daisy host]# mkswap /myswap 131072
Setting up swapspace version 1, size = 134213 kB
no label, UUID=de084bf7-71ca-4502-8742-9b1f9781d89a
[root@daisy host]# chmod 0600 /myswap
[root@daisy host]# ls -l /myswap
-rw----- 1 root root 134217728 Dec 30 10:39 /myswap
[root@daisy host]# free -m
              total        used         free      shared    buffers     cached
Mem:           1011          415          595           0          38         222
-/+ buffers/cache:    154          856
Swap:           520           0          520
[root@daisy host]# swapon /myswap
[root@daisy host]# free -m
              total        used         free      shared    buffers     cached
Mem:           1011          416          595           0          38         222
-/+ buffers/cache:    154          856
Swap:           648           0          648
```

If you want to make it permanent, then add an entry to the `/etc/fstab` file.

**`/myswap swap swap defaults 0 0`**

There are a couple of system directories that need a little more explanation, `/dev` and `/proc`.

## `/dev`

This is a strange directory, unlike most of the others that are full of files that are recognizable. Actually, this directory is full of files, device files. As already stated, Linux treats everything as a file, so device files are how we communicate with the systems hardware. They come in two distinct types: block devices that store data, and character devices that transfer data. A hard drive is a block device, and a keyboard is a character device.

In a long directory listing, `ls -l`, the first character of every line denotes the file type. `-` for a normal file, `d` for a directory and `l` for a link to another file. If we type `ls -l /dev`, we notice that apart from a few lines starting with `d` or `l`, the majority start with a `b` or `c` to denote a block or character device file. Every device on the system, and some that aren't, will be represented here, along with a few strange ones. We've already met `/dev/null` and `/dev/zero`.

If you look at the listing for the block and character devices, you'll notice something strange about the file size. It is given as two numbers, separated by a comma. This is not a file size, but the major and minor device numbers. The major number is specific to the type of device, and is used by the kernel to determine which driver to use to communicate with the device, while the minor number refers to a particular device. By example:

The first IDE/PATA channel on a PC can support up to 2 devices (master/slave), and is allocated block major 3. The first full device is then `hda` – block 3, 0. Partitions on the device are then numbered sequentially.

```
hda1      3, 1
hda2      3, 2
```

(and so forth).

The second device is **hdb** – block 3,64

```
hdb1      3,65
hdb2      3,66 etc.
```

The second ide channel (`hdc` & `hdd`) get major number 22

SCSI devices (including SATA drives and USB mass storage devices) start at major number 8, but partitions minor numbers repeat every 16, giving a maximum of 15 partitions per device.

Partitions on SCSI devices are numbered similar to the IDE/PATA devices, but are named as follows:

```
sda1      8, 1
sda2      8, 2
```

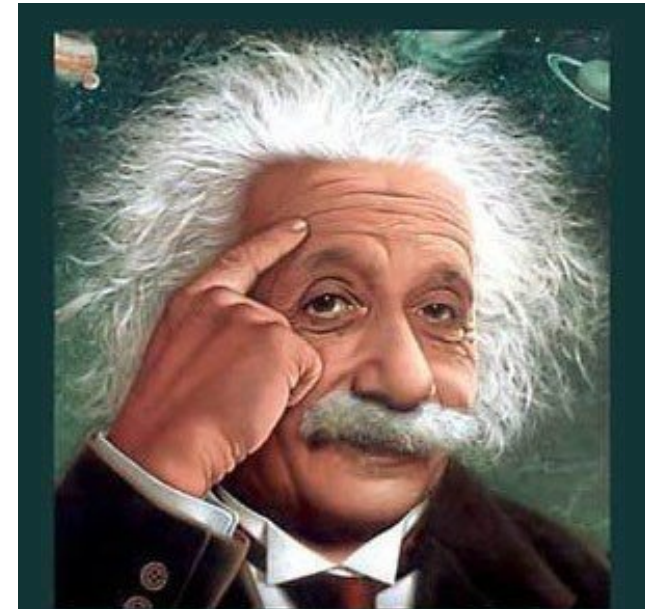
This will always be the case for systems equipped with SATA drives. In the case of USB mass storage drives, including external hard drives and memory card readers (SD/MMC, MemoryStick, CompactFlash, etc.), the device name will be **sd**x,

where **x** is determined by the order in which the USB mass storage devices are detected. For example, if a laptop has a SATA drive and a built-in card reader that reads and writes SD/MMC and MemoryStick cards, then these are named **sda** for the hard drive, and **sdb** for the card reader. Plug in an external hard drive, and that hard drive is named **sd**c.

## /proc

There is a wealth of information in here, and it reflects the entire state of the system. Unfortunately, it is not easy to find what you want, and when you do, you will probably be overwhelmed by the amount of detail. If you look inside this directory, you will see a lot of sub-directories with numbers for names. Each one of those contains all the details about a running process. The numbers are the process id, and the first one of these folders has the name 1, and contains information about process 1 - `init`, the first process to be run on boot up. If you poke about in these directories, you can find out things like the full command line that was used to invoke the process, its current working directory and a whole bunch of other stuff that the kernel finds really cool, but is of little use to mortals. Get past these numbered directories, and things start to make more sense. If you want to know all about your processor, try `cat /proc/cpuinfo`. Want a list of modules? Use `cat /proc/modules`. Most of the files in here are read only, but some of them, notably many in the `/proc/sys` directory, are writable. Even though the effects of any changes only last until the next reboot, you should be careful in here.

For example, to temporarily change the machine's hostname you could type as root **echo newhostname > /proc/sys/kernel/hostname**. Start a new terminal to see the effect.



It's easier than  $E=mc^2$   
 It's elemental  
 It's light years ahead  
 It's a wise choice  
 It's Radically Simple  
 It's ...



# HDR Photography With Qtfpsgui & Gimp

by Dave Buckler (roc4fun)

Hi All, I'm Dave. You probably know me as roc4fun. This is a tutorial about using Qtfpsgui and Gimp to create HDR photographic images.

All photographic processes suffer having a fixed – and arguably narrow – dynamic range, which is the difference between the lightest and darkest portions of an image. HDR – High Dynamic Range photography is a way of expanding the range of tones in an image. This is usually accomplished by combining portions of several exposures of the same scene. There is commercial software available for this, but thanks to our wonderful packagers, we have excellent open source versions in our repo. If you haven't done so already, you'll want to use Synaptic and install Qtfpsgui and Gimp.

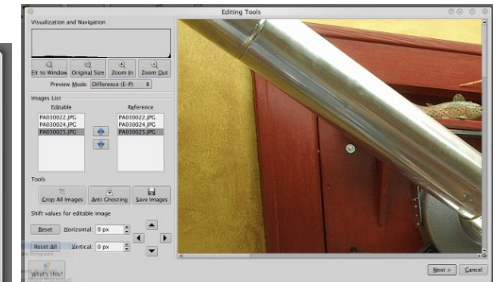
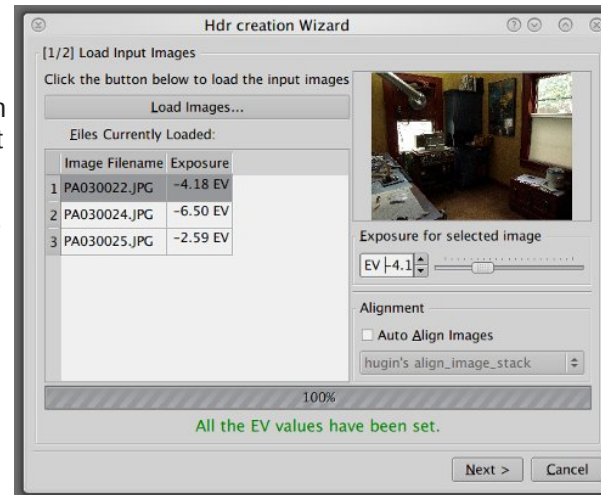
First we need some images. It's best to use a tripod to take a series of pictures of the same scene. You'll

want to bracket the exposures from too light to too dark. I generally take 3 or 5 pictures, varying the exposure by 1-2 stops.

Here (at the bottom of the page) are some shots of my girlfriend's lampwork studio. See how the windows are completely blown out in the lightest image, while the darkest image shows little other detail.

Open Qtfpsgui and click New HDR. Use the dialog box to load your exposures.

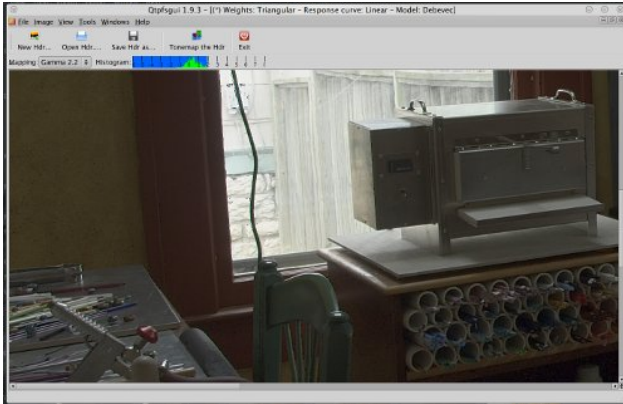
If you've had too much coffee and your images aren't perfectly aligned, you can use the automatic tool here (below). Click next.



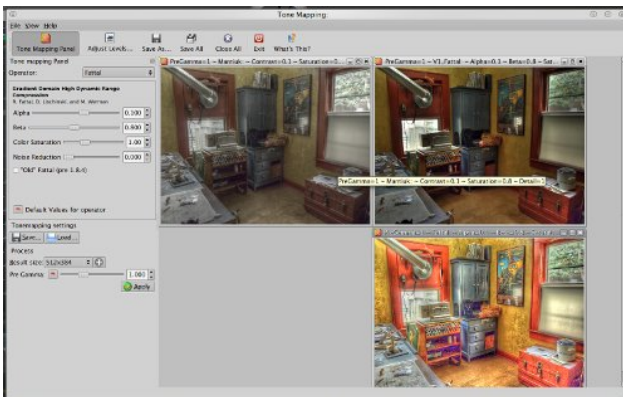
The next tool allows you to edit your images if you need to. You can manually align the exposures here. Click next.







After some crunching, Qtfpsgui presents you with an HDR image, but it doesn't look like much. That's because the HDR image is being rendered in an LDR medium. We can help this with some tonemapping. Click Tonemap the HDR.

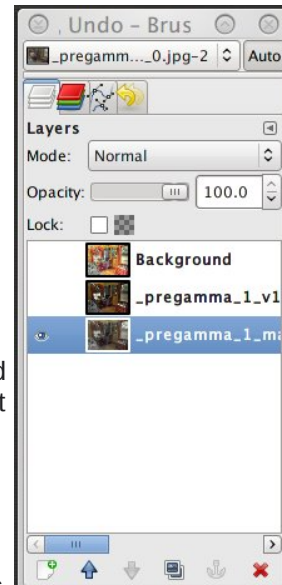


I think this is where it starts to be fun. On the left, you find a place to select an operator. The operators are different tonemapping algorithms. I'm not very knowledgeable about exactly how they work, but

each operator will give somewhat different results. Additionally, each operator can be tweaked using the controls. I've had good results with Mantiuk, Fattal - both old and new, and Drago, but don't limit yourself to my recommendations. Go crazy here and make several tonemaps. Notice you can direct the output size of your tonemap images. Small images process faster, big images are ... bigger, and take more time to process. Size them with your end use in mind. Save them somewhere convenient. Now switch desktops and open Gimp.

File – Open as layers the tonemaps you created.

This is another opportunity for creative exploration. What I generally do is put the most "fundamental" image on the bottom of the image stack and add the others above. Experiment with the layer mode of the upper images; I've had good luck with "Overlay" and "Soft Light". Use the mode and the opacity of the upper layers to control their contribution to the overall image. It should go without saying that any of the layers and the resulting flattened image can be tweaked with any other Gimp tools. Merge your layers and save.



Compare this image to the series of three initial images, and you can see a little of the power of HDR. Thanks to open source software developers and our own PCLinuxOS packagers, we have a set of HDR tools that is second to none.



# Testimonials

## New Guy From Illinois

by Howard Schabow (Howard75)



Hello everyone,

I'm a new member at this forum, but not Linux. I have been using computers for the past 20 years, and Linux for the past 10 years. Through the years, I tried various Linux distributions, starting with RedHat, then Mandrake, Suse, Mepis, Debian, Ubuntu, and others. Finally found PCLinuxOS in 2007, which satisfied all my wants and needs. I started with the 2007 KDE3 edition, later upgraded to the 2009 KDE3 edition, and I'm eagerly awaiting the next version with KDE4.

When I first started playing with Linux, I compared KDE, Gnome, LXDE, Fluxbox, Openbox, Xfce, IceWM, and JWM -- and found that I liked KDE the most. I know it's strictly a personal thing, but I come from the Windows world, so I find KDE suits my needs the best. But of course, each to his own. I'm just happy I have a choice of desktop environment. I like to have choices, so I can make the best choice to suit my wants and needs.

I have used all kinds of Microsoft operating systems, starting with DOS, Win3.1, Win95, Win98, Win2K, WinXP, Vista -- none are as stable, reliable or secure as Linux. I dual boot my custom built machine with Vista, and let me tell you, PCLinuxOS is so much better. Linux boots quicker, shuts down quicker, is much more responsive, plus I feel much

safer on the internet using Linux. Plus I love that it's free to download and install on every computer that I own.

I was even able to get my dad interested in Linux a couple years ago, and now he uses PCLinuxOS exclusively, never uses Windows. He loves that he does not have to worry about viruses and spyware -- instead PCLinuxOS just works properly for him. He does not want a bunch of problems, he just wants something that works every time.

Anyway, thanks to all of you.

Howard

## Finding A New Home

by Thomas Wyker (wyzwyk)



Hello to all. For the last dozen years I've been solely a Windows XP user, but over time have found it more and more difficult to embrace the M\$ vision of what the desktop computer experience should be. Many things about the company, their products, and their policies turn me off. A few years back, I started looking for a viable alternative. It was only natural I should give Linux a try, so I started looking at Live CDs from all the major distribution developers.

While many had features I liked, none totally satisfied my needs. However, during my search a few things became very clear to me: 1) I liked the idea of a rolling release far more than a set release

date. 2) I'm attracted to the KDE desktop, especially KDE 4.3. 3) It's great to have an active and caring distribution community that you can call upon when help is needed. 4) The distribution needs to be very newbie friendly, but not only so. Taking these needs into account, PCLinuxOS becomes the natural choice. Now that KDE 4 is approaching its second birthday, and fifth version release, I am very excited and anxious to see the PCLinuxOS KDE 4 .iso that Texstar and his crew are putting together. I have a gut feeling it will be AWESOME! With that said, I'm looking forward to joining the PCLinuxOS community and learning all about Linux.

## G'Day, From Perth, Western Australia

by Alan Drew (Lucky Blue)



I am now a forum member for a couple of days, a PCLinuxOS user for a couple of months, a Linux user for 6 mouths, a computer user for 40 years, but still a tech ignoramus. It could be that I do not have a logical mind.

I tried Knoppix and Ubuntu, but when I needed to be serious, went for Mepis. I thought it was good, but I had the usual problems, no doubt due to me, not the distro. Then the entire disk got wiped by an 'expert' I brought in to fix the wireless!

An install on a blank disk was an opportunity to review. I wanted easy, reliable, versatile, configurable, etc., so I reckoned that meant KDE,



and either Mepis or PCLinuxOS. So, I chose PCLinuxOS that time. The rolling release policy and remasterCD were attractions. I did it myself. Despite what some say, it has not been easy. I had problems with boot-up, downloading, repositories, file managers, partitioning, mounting, mklivecd, etc. Some were fixed by luck, some by forum searching and Googling, some ignorable, and some still hanging around. It is probably me rather than the distro. I want stability, but cannot resist tinkering. (The Gothic horror documentary with my disasters with Windoz may be a future project).

One thing is for sure - PCLinuxOS is clever. I see from recent posts on the forum that the key chaps have day jobs and still work on this '48 hours per day and only 15 minute breaks.' My situation is the opposite: I work 15 minutes, then fun with PCLinuxOS the rest of the day. Anyway, after the mess from configuring and adjusting and bringing in non-repository programs, I am looking forward to the new ISO with KDE4, as I want to do a (final this time) clean install.

I hope this is not too far off - I still have a PC that works despite the aforementioned 'fun,' a tribute to the stability of the distro.

Cheers, and thanks!



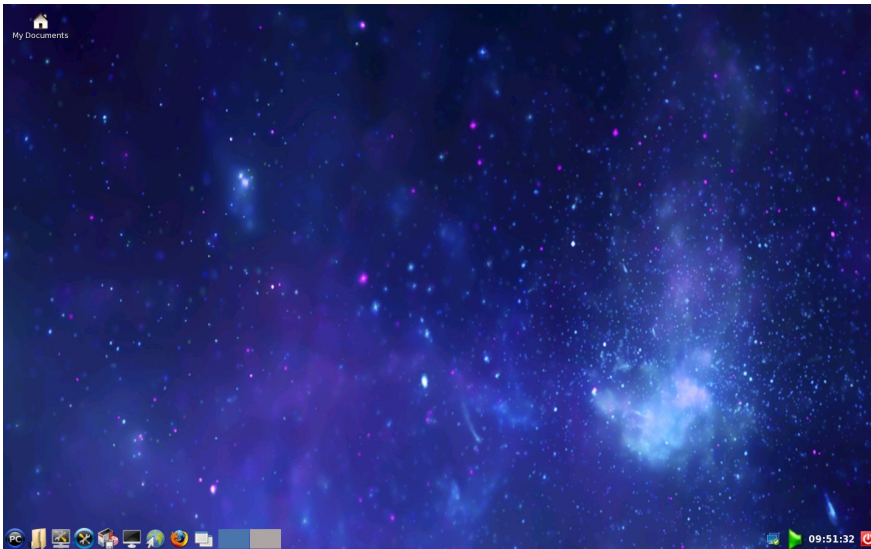
## Screenshot Showcase



Posted by T6, January 14, 2010, running KDE 4



# More Screenshot Showcase



*Clockwise, from upper left:*

*Posted by Neal, January 2, 2010, running LXDE*

*Posted by dalvarado62, January 9, 2010, running KDE 4*

*Posted by Pirate, January 14, 2010, running KDE 4*

*Posted by newmikey, January 2, 2010, running LXDE DPE (Digital Photography Edition)*

